

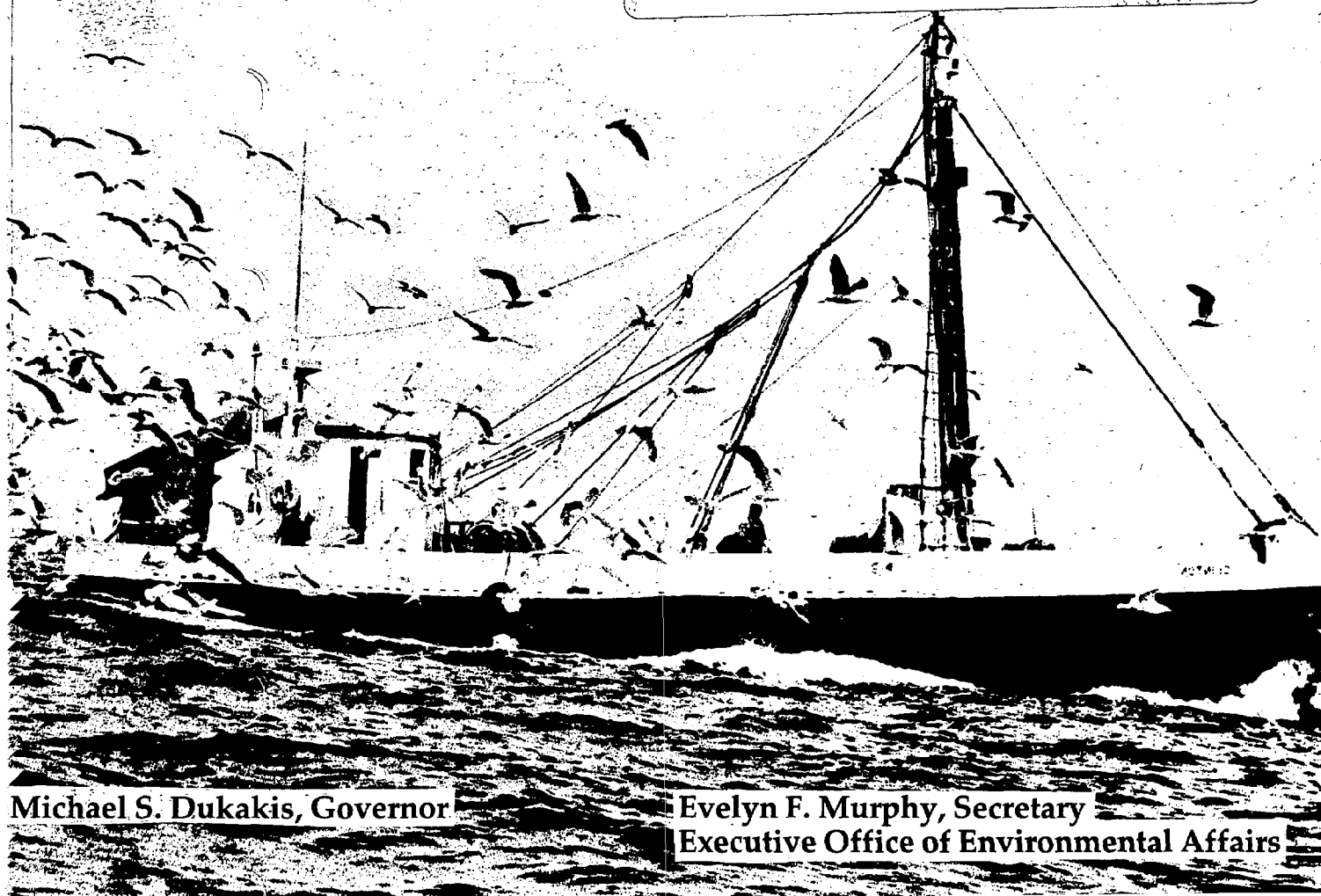
Volume I of 2



# MASSACHUSETTS COASTAL ZONE MANAGEMENT PROGRAM

ADMINISTRATIVE RECORD (1978)

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Michael S. Dukakis, Governor

Evelyn F. Murphy, Secretary  
Executive Office of Environmental Affairs



March 18, 1977

MASSACHUSETTS COASTAL ZONE MANAGEMENT PROGRAM  
VOLUME I of 2

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The preparation of this publication was funded by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U.S. Department of Commerce under a program development grant to the Commonwealth of Massachusetts.

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## ACKNOWLEDGEMENTS

Over the course of thirty months of planning, many people assisted in the development of the Massachusetts Coastal Zone Management Program. Some worked directly for CZM, while others worked for other agencies, regional planning agencies, consulting firms and the University of Massachusetts. We wish to thank them all for their tireless efforts and sincere commitment to the CZM program.

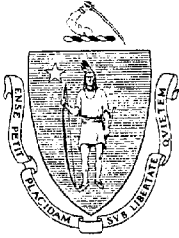
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MICHAEL S. DUKAKIS  
GOVERNOR

THE COMMONWEALTH OF MASSACHUSETTS

EXECUTIVE DEPARTMENT

STATE HOUSE • BOSTON 02133

March 18, 1977.

The Honorable Juanita Kreps  
Secretary of Commerce  
Washington, D.C. 20230

Dear Secretary Kreps:

I am pleased to submit for your review and approval the Commonwealth's Coastal Zone Management Program.

I have examined the program, and, as Governor, approve it, subject, of course, to the incorporation of such revisions made in response to comments offered by the public and governmental agencies in the course of the required National Environmental Policy Act review of the program.

The program represents state policy as it applies to the coastal zone, and, as Governor, I further certify that:

(a) The Secretary of Environmental Affairs is designated to receive and administer grants authorized by the Coastal Zone Management Act, including those for implementing the Coastal Zone Management Program;

(b) The Executive Office of Environmental Affairs, of which the Secretary of Environmental Affairs is the chief executive officer, is the lead agency for implementation of the Massachusetts Coastal Zone Management Program; and

(c) The Commonwealth has the authorities required under the Coastal Zone Management Act and has the organizational structure to implement the Coastal Zone Management Program.

Sincerely,

A large, stylized handwritten signature of Michael S. Dukakis, written in dark ink, overlapping the printed name and title below it.

Michael S. Dukakis  
Governor





EVELYN F. MURPHY  
SECRETARY

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*100 Cambridge Street*  
*Boston, Massachusetts 02202*

March 21, 1977

Dear Reader,

It is with great pleasure that I present you with the Coastal Zone Management Program.

This plan represents the culmination of thirty months work by many thousands of citizens and officials. The Governor's Task Force on Coastal Resources, the Board of Advisors to the CZM Program, regional CZM Citizen Advisory Committees (CAC), and citizens at general public meetings and smaller issue oriented meetings assisted in CZM program development. Out of the conflicts at these meetings, an improved and balanced program evolved.

Last November, the Massachusetts Coastal Zone Management Preview - A Preliminary Program for Public Review was presented to the citizens of the Commonwealth. More than 1500 copies of the Preview were distributed for review - 1300 to citizens and local officials. 10,000 copies of the Preview Summary were distributed. Countless meetings were held by the Governor's Task Force and the CZM CAC's who reviewed the Preview and prepared the regional sections of the Program. A number of meetings were held with federal agencies, which together with written correspondence from them, ensured that their needs and concerns were reflected in the Program. All totaled, more than 260 pages of written comments were received and countless discussions were held between CZM staff members and interested citizens.

This level of intensity of public participation has yielded a Coastal Zone Management Program we can all be proud of and live with for many decades to come. The Program seeks the wise allocation of coastal resources. It encourages economic development and port and harbor revitalization. It maximizes past public investments in coastal areas, and insures wise public funding in the future. The Program guarantees better management and administration on the part of state government.

The Massachusetts CZM Program has built upon the review and comments of the Preview. The subject areas of energy and energy facility siting, ports and harbors, the marine environment, the visual environment, coastal hazards like erosion and flooding, recreation, and general development in the coastal zone, have expanded and improved in the Program. A Summary of the Program was added and the Management section was reorganized. Chapter 5, on ten coastal regions, comprises Volume II.

Through this Coastal Zone Management Program, we have an opportunity to bring a more reasoned perspective to decision making about future uses and activities along our fragile coastline. By continuing the citizen-community-government partnership of the past thirty months in the years to come, together we can insure the viability of our coastal resources economically and environmentally for this and succeeding generations.

I invite your review of this Program and encourage your continuing participation in the future.

Sincerely,

  
Evelyn F. Murphy

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Policy Applications  
Map Commentary

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Character of the Region  
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K. NANTUCKET

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# 1

## INTRODUCTION

## THE PREMISE OF MASSACHUSETTS CZM

In the course of two years of planning, the staff of the Massachusetts Coastal Zone Management Program, in the Executive Office of Environmental Affairs, has talked with and listened to hundreds of citizens who have expressed concerns like these:

A Northshore fisherman: "I've fished out of Gloucester for twenty-three (23) years and I know the commercial fishing industry is in trouble. Our ships are old, our children don't want to become fishermen. Many of our harbor facilities need to be repaired and expanded. We can't compete with the foreign fleet off-shore on Georges Bank. And now they're talking about off-shore oil development in our prime fishing area - Georges Bank! We need help. What can be done to help fishermen?"

A Boston area resident: "Sure I like the beach. My whole family likes to lie on the sand and to swim. But if I don't want to go to an MDC Beach in Boston, where can I go? A hundred miles to the Cape Cod National Seashore? Fifty miles to Crane's Beach? I cannot go to any other beaches -- they're mostly private or for town use only. I would like to see more beaches open to everyone. What is CZM doing to solve this dilemma?"

A South Shore homebuilder and developer: "I think there has to be a change in the way towns and the state treat developers. You cannot imagine how hard it is to put up a subdivision these days what with all the waiting periods, reports, permits, different forms...everybody wants something else. My carpenters and electricians want to work. What can you do to cut through all the red tape?"

A Southeastern Massachusetts Planning Board member: "I want my town to be a prosperous and growing community. But I want the town to be attractive too. It is hard making decisions sometimes when we don't have the exact expertise. It would be helpful to call upon a resource person like a lawyer, a planner, or a marine biologist - but the town just cannot afford that. The state may have funds or people available, but can we trust the State? Can CZM help here?"

A Cape Cod conservationist: "I am a member of the Association for the Preservation of Cape Cod (APCC), and several other civic groups. I don't want development to overrun Cape Cod. Most of us moved on to Cape Cod to get away from crowds, long lines, and traffic. We want to see Cape Cod preserved as a special part of Massachusetts, a rural open place. There's precious little room for large scale development here. Will CZM help us to preserve Cape Cod?"

A Worcester resident: "I don't live along the coast and that makes me a second class citizen when I want to go swimming, boating, or fishing along the ocean. I've been turned away or locked out of beaches and launching areas. I have just about stopped going to the beach for the day - unhappily. Is it possible for CZM to help non-coastal residents too?"



Each of these citizens' examples have one thing in common -- they have a need or series of needs tied to coastal resources. Rich in history and tradition, the Massachusetts coast is a place for people -- carpenters, sailors, sport and commercial fishermen, office workers, longshoremen, factory workers, business people, store owners, home owners -- and very often a place of conflict when the needs of different interests meet one another in an area of finite resources. Disputes arise: build vs. conserve, local vs. state control, private vs. public beach access, accept vs. reject onshore facilities tied to offshore oil development, protect vs. develop critical coastal ecosystems.

The natural resources of the Massachusetts Coastal Zone are among our most important economic resources. Businessmen, tourists, and residents alike are attracted to the coastal areas of Massachusetts. Coastal Zone communities experience sustained pressures for development. The coastal zone typically supports commerce, industry, transportation, housing, recreation, and aesthetic needs. However, the very resources which attract so many interests to the coastal zone and support myriad activities and uses are endangered.

As a result, many coastal communities claim they do not want extensive new growth and development. Most recently, Local Growth Policy Committees have expressed a sentiment against major new growth. But such feeling is not a recent phenomenon; it seems to have been the prevailing attitude of the last decade, as confirmed by the CZM public opinion survey.

The coastal zone is a finite resource. Except for accretion and erosion, the size of our coastline remains relatively stable. Certain coastal resources must be conserved if they are to be reused in the future. Resources that support sport and commercial fishing, and recreation fit this category. Conserving those resources of the coastal zone important for maintaining water quality and supply is another example. The CZM vision for the coastal zone seeks to allocate wise use and development of the coast while recognizing the needs for replenishment of renewable resources.

Economic development of the Massachusetts coastline of the future is a must. However, the ways and means of development and expansion should recognize the aesthetic aspects of coastal areas, the natural systems of the coastal zone, and the need to replenish the living and non-living resources of the coastal zone.

The coastline of the future can be a place where uses and activities mix and support one another. Revitalizing urban port areas and providing for visual and physical access can make for a thrilling urban coastal experience. Watching a 50,000 ton ship pull into port, fishing from a harbor pier, or waiting for the fishing fleet to return from Georges Bank are exciting public events.

Massachusetts has a tradition of looking forward and of thinking about future programs, policies, and directions. The Commonwealth was first in the nation to pass legislation to protect irreplaceable coastal and inland wetlands. The establishment of local conservation

commissions served as a model for the rest of the nation. The State was first in establishing a series of town forests. Our rich and varied past supports this quality of thinking. The Massachusetts CZM Program seeks to establish a broad vision for the future of our coastal areas "for this and succeeding generations." However, uses and values conflict in the coastal zone. Quite often differing activities demand the same resources, the same scarce or fragile piece of land and water. It is impossible to meet the needs of all of the conflicting demands for uses and activities along the coast in a finite area. The policies and proposals in this document attempt to resolve conflicts where possible, and to establish values and priorities for coastal areas and resources to help mitigate conflicts in the future.

Solutions to issues and problems of erosion, flooding, dredging, sewage treatment, protection of critical environmental areas and resources, transportation, economic development, port redevelopment, harbor management, marine development, air and water quality planning, improved recreation facilities and access and energy facilities siting, -- all call for a broader perspective, a regional or state perspective. The Massachusetts Office of Coastal Zone Management in the Executive Office of Environmental Affairs attempts to provide a regional or state-wide perspective on issues and problems that transcend town boundaries. Massachusetts CZM will not interfere with traditional decision making important only to a single locale.

Over the long run, the CZM program will protect our coastline's natural riches and insure for all the residents of the Commonwealth that the environmental and economic value of the Massachusetts Coastal Zone will be sustained, and even enhanced.

#### THE MASSACHUSETTS COAST

The Massachusetts coast winds and meanders over an incredible 1,200 miles of rocky shore, sand beach, productive estuaries, fragile salt marshes, massive urban harbors, smaller town harbors and marinas, wide open spaces, tidal flats, and dozens of islands. It is one of the longest state coasts in the country -- longer even than that of California.

For over 350 years, the Massachusetts coast has offered protective shelter, natural ports, and a means of commercial livelihood for generations of Americans new and old. Much of the history and evolution of the United States emanates from Massachusetts' ports of call -- Newburyport, Ipswich, Salem, Boston, Plymouth, Provincetown, New Bedford, Fairhaven, Fall River, Edgartown, and Nantucket.

Massachusetts' coastal traditions and values live on. Many of our people still live by the sea, work by the sea, and recreate by the sea. Some 40% of the State's population lives in Massachusetts coastal communities, an area comprising less than a quarter of the land mass of the Commonwealth. More than half of all current development in the State occurs in the coastal zone. Many suburban and rural coastal

communities have experienced two-fold, three-fold, and in some cases four-fold increases in population over the past ten years. This is especially true for the south shore suburban communities and some of the towns on Cape Cod. Simultaneously, the former nerve centers of Massachusetts' life, our urban ports, have experienced declining populations and revenues. Boston, Salem, New Bedford and Fall River fall into this category.

The coast supports facilities and industries important to the economy of the entire state. Three-fourths of all energy supplies enter Massachusetts through an urban port. Eighty percent of all electric power generating plants in the state are located along the coast. Tourism is a \$1.2 billion industry in Massachusetts. More than half of this income is generated through tourism in coastal areas. Commercial fishing, including fresh and frozen fish processing, and supporting transportation and marketing services, is a multi-million dollar industry.

Much of the growth and development in the Commonwealth since World War II has been unplanned and uncoordinated. The implications of this process are just beginning to surface.

Over the 20 year period, 1951-1971, 39% of the crop land and 26% of the pasture land in a coastal strip about a half mile wide, has been lost to other uses. The amount of land used for housing, commerce, and industry has increased 34%. Land consumed by transportation facilities has increased by 27%.

The long term implications of this growth pattern have come to haunt many coastal communities. For example:

- Boston's handsome urban waterfront was forgotten when the central artery cut the harbor off from the city in the mid-1950's.
- Many suburban coastal communities have found themselves in the seemingly endless cycle of accommodating new housing development, which in turn created new demands on municipal services such as schools, fire protection, police, water, sewer services, and road maintenance. Developments were often poorly planned, and valuable open space lost.
- Valuable wetlands were filled, shellfish flats polluted, and critical coastal areas lost; homes were built in hazardous flood prone and erosion prone areas along the coast, such as on barrier beaches.
- Many Massachusetts communities began to feel the impacts from developments in neighboring communities. Regional problems took on new importance.

#### THE NATIONAL COASTAL ZONE PROGRAM

The Massachusetts Coastal Zone Management Program has been developed in the context of a national effort to improve management of the nation's coastal resources. More than half of the nation's population

lives in the counties bordering the oceans and the Great Lakes. The 31 coastal and Great Lakes states contain more than 75% of the U.S. population. Commerce, jobs, recreation, climate, and a coastal aesthetic are among the reasons coastal areas are such people magnets. Large population aggregations often create additional problems.

Three national studies conducted during the mid-1960's-1970's (The National Pollution Study, 1969; The National Estuary Study, 1970; and Our Nation and the Sea, a report from the Federal Commission on Marine Science, Engineering and Resources) convinced Congress that coastal areas were in immediate danger and need. Pressures from population growth, water pollution, and large scale unplanned development were damaging ecosystems and resources important for the natural protection of the coast, for maintaining future water quality and supplies, and essential for protecting productive ecosystems as a part of the ocean food chain. Our Nation and the Sea had stated, "The key to more effective use of our coastline is the introduction of a management system permitting conscious and informed choices among developed alternatives... for this productive region in order to ensure both its enjoyment and sound utilization."

In 1972, Congress passed the Coastal Zone Management Act (CZMA), which offered coastal states an opportunity to develop comprehensive land and water use management programs. All but one of the 34 states and territories eligible for the voluntary CZM program have requested CZM program assistance.

The language of the Coastal Zone Management Act is quite explicit. Congress declared it to be the national policy, "To preserve, protect, develop, and when possible to restore or enhance the resources of the nation's coastal zone for this and succeeding generations..." Ultimately, Congress passed CZM legislation to help states develop and implement "management programs to achieve wise use of land and water resources of the coastal zone giving full consideration to ecological, cultural, historic and aesthetic values as well as to needs for economic development."

Like all coastal states, Massachusetts was allowed three years of funding to develop a CZM plan. Once a plan is reviewed by local citizens and officials, members of the legislature, and state and federal agencies, it is submitted by the Governor to the Secretary of the U.S. Department of Commerce for approval. Massachusetts will then receive annual federal grants to implement the plan.

In preparing its plan, the Massachusetts Coastal Zone Management Program addressed the requirements of the Coastal Zone Management Act of 1972, as amended in 1976. Key elements of the Massachusetts program include:

- an identification of the boundary of the coastal zone - how far inland and seaward does the area to be managed extend.
- a definition of land and water uses within the coastal zone which have a direct and significant impact on coastal waters.

- an identification of the means by which the state proposes to control those land and water uses having a direct and significant impact on coastal waters.
- an inventory and designation of critical areas within the coastal zone requiring special management for development or conservation.
- establishing priorities for uses in particular areas, including specifically those uses of lowest priority.
- a description of the organizational structure proposed to implement the management program including the responsibilities and interrelationships of local, regional, and state agencies in the management process.

#### CITIZEN VALUES

Many of the values, priorities and policies in this management plan were developed with the help of hundreds of citizens and officials. In its earliest days, Massachusetts CZM made a commitment to involve as many citizens as possible in the development of the coastal zone management program. An open participatory process was the one way of assuring the development of a management program that would meet immediate and long term needs, grow from the demands of citizens and communities, and would have support from all levels of government.

The Governor established a Task Force on Coastal Resources to serve as CZM's first level of public participation. The Task Force, a group of 42 volunteers representing the legislature, all levels of government, and major user groups in the coastal zone, served as CZM's Board of Advisors. Several series of regional public meetings were held to discuss CZM activities and learn of local concerns. All totaled, CZM staff members have met with over 2000 citizens and officials in open public meetings. As a result of needs expressed at public meetings, a series of regional Citizen Advisory Committees (CAC) were formed. CAC members, representing coastal communities and interests, worked month-by-month over the past year to ensure that CZM policies meet the needs of sub-areas of the coast. CZM conducted a public opinion survey of 1000 randomly selected coastal residents to further ascertain the needs and desires of coastal citizens. A series of questionnaires were prepared to help local officials and CAC members set priorities on subjects such as erosion problems, recreation needs, and alternative management systems. In many cases, CZM advisory committee members sat on local growth policy committees, ensuring a two-way flow of communication between the two groups. Finally, Massachusetts CZM conducted an active public information program to inform thousands of citizens on CZM issues and progress. Newsletters,

publications, slide programs, films and newspapers stories were among the materials prepared for public dissemination.

#### GOVERNOR'S TASK FORCE

The Governor's Task Force established a series of goals which guided Task Force activities and the long term CZM planning effort. Many of the ideas in this plan developed from these goals and from CZM work products directed by the Task Force. These goals are:

- to develop a coastal zone management program which builds upon the Commonwealth's strong tradition of local government, but which also allows the state to make decisions on matters with far-reaching impacts on the coastal zone, or on the state as a whole.

- to encourage commercial, industrial, port, and energy facility developments which are required to meet the Commonwealth's social and economic needs, and to locate such development in the areas which can best absorb those activities without damaging the coastal environment or conflicting with neighboring activities.

- to improve public access to coastal land and waters which are important for recreation and leisure activity, and to provide better opportunities for those people now restricted or prevented from enjoying the recreational use of coastal lands and waters.

- to protect coastal land, water, and living resources of major significance from pollution and over-use, and to preserve from development areas of natural productivity and areas prone to damage from floods and hurricanes.

- to protect and preserve areas of valued coastal scenic character, especially those areas providing clear unobstructed views of coastal lands and waters.

- to encourage economic revitalization of urban coastal waterfronts through siting of facilities, redeveloping and restoring ports, and improving physical and visual access to urban waterfronts.

- to protect coastal water supply, coastal water quality, and coastal air quality as plans evolve for future growth and development.

- to insure a program that meets local needs by placing emphasis on citizen and community participation in the evolution of a CZM plan and management system.

- to begin to plan for the potential on-shore and near-shore aspects of Outer Continental Shelf (OCS) oil and gas development as a part of the Commonwealth's CZM program.

- to encourage orderly growth in developing areas, and to encourage revitalization and new growth in urban areas with growth potential.

- to develop a management system sensitive to the Commonwealth's fragile natural resources, and recognizing future economic, social, environmental, aesthetic, and historic needs. The management system should provide for a careful review of developments of regional importance, and provide mechanisms to guide future growth and development.

These goals are generally consistent with the long-term growth policies established by individual local growth policy committees, the Legislature through the Wetmore Commission, and the Commonwealth's long term growth and development needs established by Governor Michael S. Dukakis.

Each of these groups seek economic revitalization for the Commonwealth. However, they recognize the need to develop around existing institutional infrastructures such as waste treatment and transportation facilities. They understand the need to slow urban and suburban sprawl and the concomitant need to protect remaining farm and pasture land from development. A consensus to develop future recreational opportunities close to population centers has developed. Overall, the benefits of planned economic development have been accepted by the Commonwealth. The Task Force's goals respond to this trend.

#### CZM SURVEY

Task Force goals parallel many citizen goals as established through the CZM public opinion survey.

CZM was told in its public opinion survey that people who live in the coastal zone enjoy where they live. Massachusetts' traditional seafaring character is an important factor in their enjoyment of the Massachusetts coast. Eighty-three percent of the people surveyed expressed "character" to be a very important or somewhat important part of their enjoyment of the coast. This parallels the Task Force's goals of protecting and preserving areas of valued coastal character.

Citizens who live in the coastal zone are generally optimistic about their area. Thirty-five percent of those sampled said their area will "improve" (assumed to mean quality of life and economic well being) over the next five years, while 32% thought their area would remain the same.

Citizens expressed concern over natural problems like erosion and occasional flooding. Many more have concern over the siting of major industrial developments like power plants, refineries, and other energy related facilities. Consistent with the Task Force's goals, the great majority of people look to a combination of state and local authority to deal with the siting of major developments, and the resolution of some problems caused by natural forces.

When asked to order four potential coastal uses, citizens chose open space/conservation first, recreational facilities second, housing third, and industrial/commercial activities fourth.

The pattern held true when we asked how federal financial resources

should be allocated in dealing with coastal issues. In the rank ordering, improved water quality came up first, beach and recreational improvements second, housing development third, and attracting commerce and industry fourth. Task Force goals on improving recreational facilities, maintaining coastal character, and maintaining coastal water quality, are supported by these survey results.

When choosing among six industrial/commercial uses, commercial fishing and fish processing, small shops and restaurants, and tourist accommodations, were chosen above electric power plants, heavy manufacturing and shopping centers.

Housing is a desired coastal use, but so is improved access to the shoreline for active and passive recreation. Citizens were generally in favor of opening up the entire shoreline between high and low tide to public use. Some 49% felt that "lateral rights of access" should exist, while some 30% were opposed to the idea. This response supports the Task Force's notion of improving access.

A majority of residents went to the beach last year (76%), and more than half went boating at least once.

Overall, the survey results support a future coastal image where people have opportunities for passive and active recreational pursuits, where the quality of life is high, where traditional values and activities can exist, and where, with careful planning and forethought, future growth and development can be accommodated.

#### CITIZEN ADVISORY COMMITTEES

CZM established a series of Citizen Advisory Committees (CAC) to meet the need of having an on-going, regular group of local-regional participants to evaluate, guide, and at times prepare parts of the CZM Preview. The CAC's served as a final check on the values and perspectives underlying Massachusetts CZM. The CAC's met on a regular basis and had a major role in the value and priority setting evidenced in the regional chapter of this plan which is now under preparation. CAC membership included an appointee of the mayor or board of selectmen and representatives of the major user-interest groups in the area.

The seven Advisory Committees verified and updated maps and other planning documents, helped in setting local priorities and needs, and are helping to apply broad policies to regional areas. CAC members were responsible for making sure CZM meets the needs of their region of the coast.

#### PAST PLANNING AND COASTAL ZONE MANAGEMENT

The CZM staff was determined to draw upon all existing resources in its planning and participation activities. Early in the program's development, CZM staff planners visited and collected reports and documents pertinent to coastal zone management from individual town halls, regional planning agencies, universities, state agencies, interstate agencies, and federal agencies. Much time was spent synthesizing and



correlating this information. The process enabled CZM to view issues comprehensively, to know what information existed, and to know what information and data would have to be collected.

One of the most important of these resources proved to be the New England River Basin Commission's-Southeastern New England Study (SENE). SENE had established recommendations for growth and development for much of Southeastern Massachusetts and Rhode Island in a 3-1/2 year planning program. The SENE project had included wide public involvement and served as an introductory guide to citizen and community desires. Some 50% of Massachusetts CZM's initial planning data came from SENE, saving the Commonwealth much time and expense.

After reviewing the SENE study, the Task Force directed the CZM staff to study past development trends, alternative means of guiding growth and development, and to evaluate the efficacy of using existing state and local laws to deal with problems and issues in coastal areas. The Task Force was interested in maximizing public investments, protecting fragile resources, preserving the coastal feel and tradition important to residents and tourists alike, and ways to make developmental opportunities more efficient and assured.

#### THE MANAGEMENT SYSTEM

After careful analysis, CZM has concluded that state and local governments have the basic administrative, legal, and institutional means available to do much of what is necessary to apply CZM policies and to manage future coastal activities and development. Recognizing that Massachusetts has both strong state government and strong local government, what is needed is a new era of mutual support and cooperation between these two levels of government, and the development community which has had such a large say in the siting, scale and density of developments.

CZM has developed a management program which offers technical assistance to communities, provides for federal consistency with CZM policies, and above all, sets a high priority on placing the state's regulatory and management programs in order and making them work in a more assured, timely and consistent manner.

#### Considerations in the Design of a Management System

In developing the management program three criteria had to be met. First, coastal zone management had to be built upon an existing management, regulatory and administrative framework. It had to be responsive to new programs in the environmental, economic development and land use fields. It had to synchronize with developing state programs and fit in with the state's legislative and political history. If CZM's management approach were inconsistent with state history and the times, no matter how inventive or virtuous the system might be, the ability to implement the management program would be weak, and, quite possibly fail.

While simplistic, the second criteria called for development of a management system that would be both useful and used. This criteria addressed the mechanics of the system: under what institutional structure and management, and with what training and materials, will a management system be used to implement a body of policy?

Finally, the management program had to improve existing procedures and offer strong incentives for long term acceptance. CZM would have to be sufficiently resilient and institutionalized to survive the tenure of any single person or administration, to meet this final criteria.

The management system described throughout this plan meets all three criteria. Of equal importance, there is enough flexibility in the CZM program to accommodate additional legislation or authority should it prove necessary over time.

#### A Management System that Fits within the Times in Massachusetts

During the 1960's and early 1970's, Massachusetts led much of the rest of the nation in passing environmental legislation. Legislation protecting and restricting inland and coastal wetlands was improved; the establishment of Scenic Rivers and Highways became possible; and much more. However, the pace with which this legislation was enacted made it practically impossible for the executive branch to keep pace with sound, efficient management of newly enacted programs. Often, appropriations to implement the programs lagged behind the enabling legislation. Management of these programs, up to recent times was fragmented, uncoordinated, and in some instances, seemingly non-existent.

However, in 1975, the reorganization of the states' environmental programs into the Executive Office of Environmental Affairs became law. Reorganization placed environmental regulatory, environmental management and other land use and water use programs under a single administrative director, the Secretary of Environmental Affairs. (The National Council on State Governments has called the reorganized Massachusetts environmental agency one of the top two environmental agencies in the country.) Reorganization provided the administrative structure to bring coordination and efficiency to environmental programs.

The Secretary of Environmental Affairs was given broad ranging responsibilities for setting environmental policy, and for ensuring consistency with all EOEAs departments. The Secretary of Environmental Affairs placed management reform and improvement as the first goal of reorganization. As with any business merger, it takes several years to implement a reorganization completely. The State's recent economic difficulties added even more time to the implementation time schedule.

In developing a coastal zone management program, the Secretary had an opportunity to put reorganization to the test. Here was a program that needed to draw upon Environmental Affairs as a reorganized agency with expanded responsibilities, which would utilize and improve the management of new and existing programs, and had the backing of federal financing to help the state overcome its economic-management problems. Through the CZM program, the Secretary of Environmental Affairs has begun

to integrate and coordinate the many areas of statutory responsibility of the agency.

Sometimes referred to as "networking," the coastal zone management program represents the next step in the state's evolving effort at instituting better management. The CZM program represents a deliberate systematic effort to bring all state environmental legislative authority to bear on a specific region of the state -- the coastal zone. Under coastal zone management, the Commonwealth will assess the impact of proposed activities in the coastal zone, encourage those activities that are consistent with coastal zone policies, and discourage or prohibit those that are inconsistent. The policies presented in this plan state publicly the Commonwealth's needs, desires, goals, and priorities for activities and uses in the coastal zone.

#### A Management System that is Useful and Used

A management system must represent more than ideals. It must draw upon the strengths of government, the wisdom of the citizenry, and use existing legal and institutional tools. In Massachusetts, we have both strong state government and strong local government. Recognizing this fact, and building upon it, is a prerequisite of a useful and used management system.

The Southeast New England (SENE) Study stated, "Municipalities should continue to make the bulk of land use decisions because they are of local significance, for those development decisions which because of their size or effect on certain critical resources will affect more than one community, a regional or state perspective will be needed." CZM agrees with this conclusion.

Recognizing the strength of home rule, CZM will not dictate to communities. Rather, under CZM, the state will play a more effective "resource role" to communities providing information, technical assistance, and specialized personnel when needed, on the local level. The state's role vis-a-vis certain developments of regional impact, including energy facilities, solid waste and sewage treatment plants, and new transportation systems, is clarified in this plan. With additional funding from CZM, improved administration of existing laws can be expected.

State funded resource personnel will be available upon request to assist local units of government to respond quickly, reasonably, and in a more informed manner to local permit approvals. If desired, CZM will prepare a series of model land use by-laws which communities may choose to adopt to improve conditions in the locale.

These ideas came from Citizen Advisory Committee members and other interested citizens and officials CZM has worked with over the past two and one-half years. Similarly, citizens were suspicious of creating a new, potentially cumbersome, expansive bureaucracy at either the state or regional level. There was little public support for regional government. In general, citizens expressed concern about the day-to-day management of existing state programs. "Put your own house in order

first," CZM was told, "before you begin looking for new authority." Improvement of the state's management system became the highest priority of CZM. There would be no new layers of bureaucracy.

Changes have already begun. For example, the Department of Environmental Quality Engineering has undergone an internal reorganization which will help CZM to reach many of its goals. Some regulatory laws will be administered from regional offices, allowing state laws to better meet regional and local needs. A comprehensive permit tracking program will help to keep the state to a known time schedule. A comprehensive permit application form will simplify permit application procedures. Overall, these changes will help to streamline and unify the Commonwealth's environmental regulatory programs, and to reduce the amount of time necessary to receive state environmental decisions on projects. This will all be accomplished without any loss in the depth or quality of state analysis in permit approvals.

Finally, to be a used and useful management system, planning and policy materials like maps, data, and guidelines for implementing policy must be widely accessible to officials at all levels of government and any interested parties. Copies of the CZM map atlas and plan are in every coastal town hall, every coastal library, and the offices of regional, federal and interstate agencies. CZM materials were designed to be used. Almost a thousand citizens and citizen groups - including real estate, commercial, environmental and civic interests - have copies as well.

#### A Management System that Survives the Tenure of State Administration

Any management program must be fully institutionalized in the daily operations of government and be an integrated part of public policy decision making if it is to remain viable over time. New programs associated with a single person, staff or administration will often disappear when key figures depart government. The policies of coastal zone management are now being integrated into the on-going programs within the agencies and departments of Environmental Affairs.

As described in fuller detail in the Coastal Policies Chapter and the Management Chapter, CZM will utilize several different mechanisms to ensure a desirable administrative structure. New regulations relating to the coastal activities of various agencies will be promulgated by the Secretary of Environmental Affairs, and follow the formal public procedures established by the Massachusetts Secretary of State. Once promulgated, regulations tend to have a tenure far beyond the administration which drafted them.

Federal CZM funds will be directed to existing agencies with coastal management responsibilities under the CZM plan, which are now understaffed, underfunded or unfunded. The Coastal Wetlands Restriction program represents one of the many regulatory and management programs in need of funds or staffing. These CZM funded personnel, applying CZM policies on a daily basis, will ensure CZM longevity and integration into state government. CZM funding will facilitate better, more comprehensive, and timely decision-making by state government in coastal areas.

CZM action grants and technical assistance for coastal communities will improve the ability of communities to implement positive coastal developments and enable a constituency of committed and informed local coastal zone decision-makers to develop.

To initiate implementation of the CZM Plan, memoranda of understanding have been signed between the Secretary of Environmental Affairs and the five EOE department, and between the Secretary and the Energy Facilities Siting Council.

To further establish coastal zone management in Massachusetts, the Governor will formally endorse the CZM program as state policy. The Secretary of Environmental Affairs will adopt the plan as a part of the formal policy and regulations of Environmental Affairs.

Coastal Zone Management described throughout the plan has been designed to be a viable and practical system. It improves the administration and operations of existing state programs, responds to the needs and desires of users of the coastal zone, and will endure over time.

To be truly effective, CZM improvements will require a new era of cooperation and communication among local state and federal government, and the many interests and users of the Massachusetts coast. It is only through this symbiotic relationship that government can effectively guide growth and development into those areas able to sustain development and to protect and conserve critical environmental resources. Furthermore, Massachusetts coastal zone management recognizes the need for openness and dialogue when conflicts arise.

#### THE MASSACHUSETTS CZM PLAN

Each chapter of the Massachusetts Coastal Zone Management plan has a distinct purpose. Chapter II contains a description of the landward and seaward boundaries of the Massachusetts coastal zone and a summary of how the CZM policies apply to the areas and activities within these boundaries.

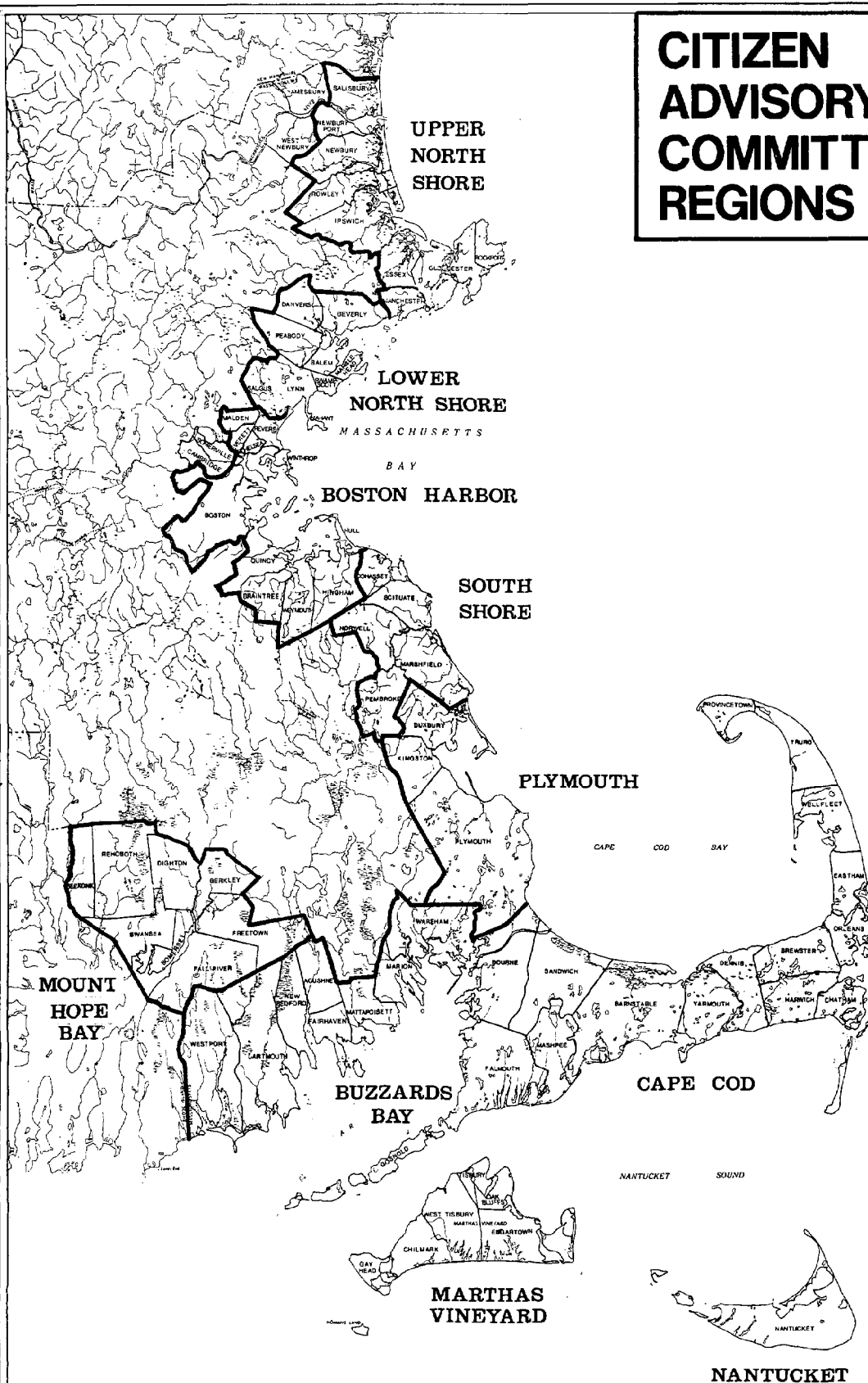
Chapter III contains a series of sections presenting long-term state coastal policies on the resources of the coastal zone - the marine environment, visual access and quality, and coastal hazards; and the primary uses of the coastal zone - port and harbor development, recreation and physical access, and energy related uses of the coastal zone. These statements of state policy will guide state programs and activities in coastal areas. The policies in Chapter III are broad and not applied to specific geographic areas. Under the federal CZM Act of 1972, federal activities must be brought into compliance with these policies as well. This section of the plan describes how the state will exert its expanded influence over federal activities in the state's coastal zone. Specific policies, implementation measures, and incentives are found at the end of each section. A discussion on guiding development through public investment concludes the chapter.

Chapter IV of the plan is on Management, and includes an in-depth analysis of coastal zone management under existing institutional and administrative structures. Aside from describing relevant authorities, this chapter deals with the central issue of how to implement broad coastal policies in moving from planning to action.

In Chapter V, the policies presented in Chapter III are applied to ten regions of the coast. The regions include: Cape Ann-Ipswich Bay; Lower North Shore, Greater Boston Harbor; South Shore; Plymouth Bay; Buzzard's Bay; Mount Hope Bay; Cape Cod; Martha's Vineyard; and Nantucket. This part of the plan is site specific in the application of policies, and represents intense labor by Citizen Advisory Committee members working with CZM staff and local officials. The CAC's have done a substantial amount of work in establishing use and activity priorities for their communities and in applying CZM policies to each respective region. Each regional chapter contains a description of the character of the region; citizen perceptions based on the insights of CAC members, local growth policy statements, and the CZM public opinion survey; CZM policy applications to the region; and a map commentary and series of maps.

Four appendices dealing with legal documents, federal participation, public participation, and coordination with existing plans are also included in the plan. One other appendix, Legal Authorities for the Implementation of the Massachusetts CZM Program, is available on request.

# CITIZEN ADVISORY COMMITTEE REGIONS



**EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
COASTAL ZONE MANAGEMENT PROGRAM**



# 2

## MASSACHUSETTS COASTAL ZONE POLICIES AND SUMMARY



## MASSACHUSETTS CZM POLICIES

### MARINE ENVIRONMENT

- Policy (1) Conserve ecologically significant resource areas (salt marshes, shellfish beds, dunes, beaches, barrier beaches, and salt ponds) for their contributions to marine productivity and value as natural habitats.
- Policy (2) Protect complexes of marine resource areas of unique productivity (Areas for Preservation or Restoration (APRs)); ensure that activities in or impacting such complexes are designed and carried out to minimize adverse effects on marine productivity, habitat values, water quality, and storm buffering of the entire complex.
- Policy (3) Support attainment of the national water quality goals for all waters of the coastal zone through coordination with existing water quality planning and management agencies; ensure that water bodies within Areas for Preservation or Restoration are given priority for achievement and, where consistent with federal and state law, maintenance of the highest level of water quality; and ensure that all activities endorsed by CZM in its policies are consistent with federal and state effluent limitations and water quality standards.
- Policy (4) Condition construction in water bodies and contiguous land areas to minimize interference with water circulation and sediment transport and to preserve water quality and marine productivity.
- Policy (5) Ensure that dredging and disposal of dredged material minimize adverse effects on marine productivity.
- Policy (6) Accommodate off-shore sand and gravel mining needs in areas and in ways that will not adversely affect marine resources and navigation.
- Policy (7) Encourage and assist commercial fisheries research and development, restoration of fishery resources, the development of extensive and intensive aquaculture, and anadromous fish enhancement, initiated at local, state, and federal levels.

## COASTAL HAZARDS

- Policy (8) Discourage further growth and development in hazardous areas and preserve natural buffers throughout the coastal zone.
- a. Restrict new development in identified V and E zones and in barrier beach, sandy beach, primary dune, and salt marsh Significant Resource Areas to the permitted uses defined under Policy 1, Marine Environment section.
  - b. Condition new development in contiguous upland areas within a zone extending landward to 100 feet inland of the limit of the 100 year flood, especially within designated Areas for Preservation and Restoration, to ensure that existing hazards are not exacerbated and that the proposed uses of activities are appropriate in light of the risks of damage.
  - c. Ensure that development proposed to be located in intertidal areas or offshore in coastal water bodies will not exacerbate existing erosion or flooding hazards in adjacent or downcoast areas.
  - d. Encourage and support local floodplain zoning and other management of hazardous areas in all coastal towns.
- Policy (9) Ensure that state and federally funded public works projects proposed for location within the 100 year coastal floodplain will:
- a. not exacerbate existing hazards or damage natural buffers,
  - b. be reasonably safe from flood and erosion related damage, and
  - c. not promote growth and development in damage prone or buffer areas, especially in undeveloped areas of APR's.
- Policy (10) Acquire undeveloped hazard prone areas for conservation or recreation use.
- Policy (11) Provide funding and technical assistance for the restoration and stabilization of foreshore and shore areas in hazardous zones using non-structural measures.
- Policy (12) a. Implement federal or state structural solutions to protect property and lives only when there will be widespread public benefits and minimal adverse environmental effects.

- b. Approve permits for private flood or erosion control projects only when it has been determined that there will be no adverse effects on adjacent properties or down coast areas.

#### VISUAL ENVIRONMENT

- Policy (13) Encourage incorporation of visual concerns into the early stages of the planning and design of all facilities proposed for siting in the coastal zone. Use existing review processes to ensure that publicly funded development minimizes adverse impacts on the visual environment.
- Policy (14) Review developments proposed near designated or registered historic districts or sites to ensure that federal and state actions and private actions requiring a state permit respect their preservation intent and minimize potential adverse impacts. Encourage use of local zoning, land use controls, and tax incentives to improve visual access and the compatibility of proposed development with existing community character.
- Policy (15) Expand visual access in urban areas and provide views of coastally dependent activities with significant educational or interest value.
- Policy (16) Encourage scenic river, scenic highway, and scenic road designation in the coastal zone and support designation of Areas for Preservation and Restoration as "Sign Free Areas."

#### PORTS AND HARBORS

- Policy (17) Encourage maritime commerce and related development in port areas. Prohibit preemptions of proposed maritime-dependent industrial uses. Permit non-maritime dependent industrial uses which do not represent an irreversible commitment of sites and which do not preempt foreseeable maritime-dependent industrial uses.
- Policy (18) Promote the widest possible public benefit from port and harbor and channel dredging and ensure such proposals are consistent with marine environment policies.
- Policy (19) Encourage, through technical and financial assistance, the expansion of water-dependent uses in port areas and developed harbors where the risks of damage to the marine environment are minimal.
- Policy (20) Encourage urban waterfront redevelopment and renewal in developed harbors in order to link residential

neighborhoods and commercial downtown areas with physical and visual access to the waterfront.

#### RECREATION

- Policy (21) Improve public access to coastal recreation facilities, and alleviate auto traffic and parking problems through improvements in public transportation.
- Policy (22) Link existing coastal recreation sites to each other or to nearby coastal inland facilities via trails for bicyclists, hikers and equestrians, and via rivers for boaters.
- Policy (23) Increase capacity of existing recreation areas by facilitating multiple use of the sites and by improving management, maintenance and public support facilities. Resolve conflicting uses whenever possible through improved management rather than through exclusion of uses.
- Policy (24) Provide technical assistance to developers of private recreational facilities and sites that increase public access to the shoreline.
- Policy (25) Expand the physical size of existing state or local recreation facilities in regions with a high need.
- Policy (26) Acquire and develop new sites in conjunction with transportation improvements and at a scale compatible with the social and environmental characteristics of the surrounding community(ies). Give highest priority to areas with a high need and few remaining opportunities.
- Policy (27) Review developments proposed near existing public recreation sites in order to encourage minimization of their potential adverse impacts.

#### ENERGY

- Policy (28) Maximize the use of existing oil terminals. For new oil terminals, ensure that environmental impacts and effects on port operations are appropriately considered.
- Policy (29) Consider the siting of oil tank farms in areas outside the coastal zone.
- Policy (30) Weigh the environmental and safety impacts of locating proposed coastal gas facilities at alternative sites.
- Policy (31) Consider alternative sites, including inland locations, prior to siting electric generating facilities in the coastal zone.

- Policy (32) Consider alternative sites, including inland locations, for refineries. For deepwater ports consider alternative coastal sites to ensure that harm to the marine environment is minimized.
- Policy (33) In exploiting indigenous or alternative sources of energy (off-shore oil and gas, coal, solar, wind, and tidal power) and off-shore mining minimize, to the extent practicable, adverse impacts on the marine environment, especially with respect to fisheries, water quality, and wildlife, and on the recreational values of the coast.

GENERAL DEVELOPMENT  
AND  
PUBLIC INVESTMENT

- Policy (34) All development must conform to existing state and federal requirements governing sub-surface waste discharges, point sources of air and water pollution, and protection of inland wetlands.
- Policy (35) Upgrade public infrastructure in existing developed areas, assigning highest priority to infrastructure which meets the needs of urban and community development centers.
- Policy (36) Encourage the revitalization of existing development centers in the coastal zone by providing federal and state financial support for residential, commercial, and industrial redevelopment.
- Policy (37) Encourage the adoption of local zoning and regulatory controls which promote clustering of new development and encourage compatibility between future growth and public infrastructure investments.
- Policy (38) Encourage major developments conforming to CZM policies and assist developers to reach such conformance.

## MASSACHUSETTS COASTAL ZONE POLICIES AND SUMMARY

This chapter summarizes the Massachusetts Coastal Program. It begins by describing the coastal boundary and then proceeds inland from the ocean, generally describing what types of development can occur and the policies that apply in the coastal area. A summary map in the back of this volume is keyed to the various areas described below.

### WHAT IS THE COASTAL ZONE?

The Massachusetts Coastal Zone includes the lands and waters within the area defined by:

The seaward limit of the state's territorial sea (i.e., 3 miles), extending from the Massachusetts-New Hampshire border south to the Massachusetts-Rhode Island border, and landward to 100 feet inland of a major road, rail, or other visible right-of-way.

In order to encompass important sensitive resource areas, CZM examined several lines which approximated the boundaries of natural systems: coastal watersheds, coastal floodplains, the 50-foot topographic elevation, coastal ecosystems, and the coastal "viewshed." Although watersheds extended extraordinarily far inland, the other boundaries clustered normally at a distance of approximately 1/2 mile from coastal water or salt marsh. Massachusetts CZM and participating citizens chose an easily recognized road boundary which approximates the inland edge of valuable natural coastal systems and includes other land on which major activities could potentially impact coastal resources. Roads were thus selected to delineate an administrative boundary that encompasses coastal biophysical processes.

The names of the roads from New Hampshire to Rhode Island are listed in Appendix A. The coastal zone includes all islands, transitional and intertidal areas, coastal wetlands and beaches. In isolated instances, where the road boundary might exclude significant resource areas, the boundary line departs from the road to encompass them. Tidal rivers and adjacent uplands are included inland, at a minimum, to the extent of vegetation affected by saline water. Anadromous fish runs are included to the fresh water breeding area, if such area is within a coastal town. Land owned by the federal government is excluded by law from the coastal zone.

### OVERVIEW OF WHAT CAN OCCUR IN THE COASTAL ZONE

The Massachusetts Coastal Zone Management Program does not include new laws or increase the present number of state or local permits required for development activities. It is felt that current laws and permit procedures provide adequate controls to carry out priorities for uses of the coastal zone. Essentially, development can occur where it occurs now, subject to the following:

- a) maritime-dependent development is given priority over non-maritime dependent development in designated ports,

- b) general development is encouraged to locate in already developed areas or areas contiguous to them,
- c) development will be permitted if it meets certain conditions:
  - in all areas below mean high tide including ocean sanctuaries;
  - in all wetlands covered by the Wetlands Protection and Inland Wetlands Act;
  - where soil cannot support sewage disposal systems and sewers are not available; and
  - near recreation sites or designated historical sites if the development would have a negative impact.

- d) development is restricted:

- in the 30,000 + acres now restricted under the Wetlands Restriction Act.

Development will be permitted in all other areas provided existing state and local requirements are met. Energy facilities, for example, will need to obtain approval from the Energy Facilities Siting Council. Whether an area otherwise meeting the above conditions is used for single family homes, high rise apartments, commerce or industry will continue to be decided by local governments. Although the program points out other concerns associated with development pressures present in the coastal zone - competition among land and water uses, loss of community character and visual degradation - the state will use a range of incentive devices rather than regulatory powers to address them. General development is encouraged to locate in existing developed areas and adjacent lands by using federal and state investment to provide sewer and transportation services. State sewerage priorities already follow this policy, and proposed transportation projects will be reviewed for consistency with this policy.

#### OPEN OCEAN WATERS:

Open ocean waters include ocean waters other than estuaries and coastal embayments. The open ocean provides opportunities for the harvest of living marine resources and mineral resources, recreation, and water transportation.

#### Summary of Policies:

- Protect the open ocean environment from impacts caused by sand and gravel mining, dredging and dredge disposal. (Policies 5, 6.)
- In exploiting offshore energy resources, minimize impacts on the marine environment. (33)

High priority uses of the ocean are commercial fishing, shipping, and water sports. Uses which are conditioned are dredging, dredged spoil disposal, and mineral and energy resource extraction.

#### SIGNIFICANT RESOURCE AREAS\*

There are three types of Significant Resource Areas (SRA's)

\*See GAPC's area on Summary Map.

that will be discussed: 1) Ecological which is divided into Restricted Ecological and Conditioned Ecological, 2) Economic and 3) Recreation.

1. Significant Resource Areas: (Ecological)\* These are natural features whose roles in the environment are vital to the continued health, productivity and functioning of coastal ecosystems and whose values can be destroyed by physical alteration. They are barrier beaches, dunes, beaches, saltmarshes, shellfish beds, salt ponds, estuaries, embayments, and anadromous fish runs. In addition, land 100' inland of the 100 year floodplain which is subject to or serves to buffer and dissipate the forces of flooding and/or erosion is included. Currently these Significant Resource Areas are divided into two types:

1a. Significant Resource Areas: (Restricted)\* This refers to areas already restricted pursuant to the Wetlands Restriction Act, currently about 30,000 acres, mostly saltmarshes, about 40% of the state's coastal wetlands.

The policies for these SRA's are summarized as follows:

- Restrict construction in ecologically significant resource areas or complexes of them to protect water quality and their contribution to marine productivity and value as coastal habitat. (Policies 1,2,4)
- Condition dredging of ecologically significant resource areas to minimize impacts. (Policy 5)
- Provide technical assistance and funding for environmentally responsible projects in aquaculture, dredging. (Policies 5, 7, 18)

High priority uses of these areas are limited to conservation, shellfish harvesting, outdoor recreation and other non-intense uses; permissible uses are underground energy transmission lines, and certain other utility lines; maintenance of existing roads and boat channels, and the construction of wharves, piers, boat shelters, floats and catwalks. Maintenance dredging and the dredging of ship channels in designated port areas is also permitted. All other uses are prohibited or conditioned appropriately.

1b. Significant Resource Areas: (Conditioned)\* These areas are the remainder of the natural features described as SRA's (Ecological) which are not presently in the Wetlands Restriction Program. It is the policy of the state to place many of these areas under the Restriction Act in the future. This category also includes the land 100' inland of the 100 year floodplain. Until such time as Restriction occurs, protection of these areas will continue to be provided by

\* See GAPC's area on the Summary Map.



the Wetlands Protection Act and regulations thereunder.

It is important to note that, in the interim, no uses are prohibited per se in these areas; rather they are conditioned to protect certain interests specified by the Wetlands Protection Act. All uses are permitted provided that the following interests are met as specified in the Wetlands Protection Act:

- protection of land containing shellfish;
- protection of fisheries;
- prevention of pollution;
- storm damage prevention;
- flood control;
- ground water supply;
- public or private water supply.

The authority to condition construction in such areas is vested in local conservation commissions, under state guidelines. Supplementary protection is afforded by the National Flood Insurance Program administered through the U.S. Department of Housing and Urban Development. CZM policies are oriented towards conservation of these areas and protection of natural buffers and the users of damage prone areas.

The policies are summarized as follows:

- Condition construction in ecologically significant resource areas or complexes of them to protect water quality and their contribution to marine productivity and value as coastal habitat. (Policies 1, 2, 4)
- Condition dredging of ecologically significant resource areas to minimize impacts. (Policy 5)
- Provide technical assistance and funding for environmentally responsible projects in aquaculture, dredging. (Policies 5, 7, 18)
- Protect significant resource areas important for their storm buffering capabilities, and discourage new growth and development in areas subject to tidal flooding and coastal erosion. (Policies 8, 9, 10)
- Encourage the use of non-structural protection measures and condition construction of erosion control structures to mitigate adverse effects on downcoast areas. (Policies 11, 12)
- Protect water quality, groundwater, fisheries, and shellfish. (Policy 1)

High priority uses for the marshes, salt ponds, beaches, barrier beaches, shellfish beds, and dunes are the same as for natural Significant Resource Areas (Restricted).

In the remainder of the area between the significant natural features and 100' from the 100 year floodline, all uses are permitted provided they do not significantly impact a wetland area. Public works projects which encourage development in hazardous areas are considered low priority, as are structural protection measures, unless warranted by overriding public interests.

2. Significant Resource Areas: (Economic)\* These are areas where development is important to the economy of the region or Commonwealth and where capabilities exist to support coastally dependent development, e.g., ports, developed harbors, and urban waterfronts. These significant resource areas are designated as high priority areas for development of maritime-dependent and waterfront-related uses. Policies advocate land and water development in order to increase the use and growth of port and harbor facilities.

The policies are summarized as follows:

- Deter preemption of maritime industrial uses in designated ports and encourage the growth of maritime commerce. (Policy 17)
- Promote the use of developed harbors for recreational boating and commercial fishing and support the redevelopment of urban waterfront areas. (Policies 18, 19, 20)

High priority uses in designated ports are fishing operations, maritime shipping and marine industry. Other uses are permitted provided they do not conflict with these priority uses. Recreational boating, tourist facilities, and water-related activities are considered priority uses in developed harbors. New dredging and filling outside of these SRA's are low priorities.

3. Significant Resource Areas: (Recreation)\*\* These areas are recreational areas which are unique to the coastal zone such as beaches, boat facilities, related trails, and campgrounds.

These significant resource areas are managed primarily through government funding for maintenance improvements and acquisition. However, CZM policies also focus on increasing non-auto coastal access. Additionally, the policies presume a public right to recreation; therefore, developments which jeopardize existing recreation shall be reviewed under the Massachusetts Environmental Policy Act and conditioned appropriately in order to minimize impacts. The policies are summarized as follows:

- Improve the access to, and management of, existing recreation facilities, particularly within areas of high need. (Policies 21, 22, 23)
- Expand sites where opportunities exist and the resources can tolerate increased use; purchase sites in areas of high need. (Policies 25, 26)

\*See Developed areas on Summary Map

\*\*See Public Areas on Summary Map.

- Provide technical assistance to private recreation developers who increase public access to the shoreline. (Policy 24)
- Protect existing recreation sites from impacts or proposed abutting developments. (Policy 27)

High priority use of these areas is recreation. Because areas used for recreation are generally coincident with ecologically significant areas, permissible uses are limited. Development abutting public beaches will be required to minimize adverse effects to these recreation sites.

#### AREAS SUBJECT TO DEVELOPMENT CONSTRAINTS\*

These are areas with impermeable soils, steep slopes or bedrock near the surface. Unless public sewers are provided to overcome such constraints, the State Environmental Code constrains development requiring sub-surface waste disposal, and uses will generally be open space, recreation, and low density residential. The map summary is generalized and when site specific tests are made the soil may be found to support septic systems that will allow higher density. If areas subject to development constraints are sewered, they can be developed similarly to those areas described as the remainder of the coastal zone.

#### REMAINDER OF THE COASTAL ZONE:\*\*

The remaining areas on the summary map have soils suitable for development or are currently developed and lie inland of the 100 year floodplain plus 100 feet. The state has certain limited interests which may constrain uses in this area. The five most significant are:

1) Accommodate Energy Facilities: Because certain types of energy production, storage, and distribution facilities are dependent on waterfront siting, mechanisms must be provided to ensure that these uses can be accommodated. The Energy Facilities Siting Council will be used to resolve conflicts as they arise. The salient policies relating to these concerns are:

- in considering alternative sites for energy facilities, balance environmental and safety impacts, effects on port operations and coastal dependency concerns with energy supply needs and costs. (Policies 27, 28, 29, 30, 31, 32)

2) Protection of Beach Recreation and Historic Sites. Beach recreation and historic sites or districts must be protected from conflicts caused by adjacent uses or activities which would degrade their quality. The Massachusetts Environmental Policy Act and the Federal procedures for protection of historic districts will be the principal management measures used to minimize such conflicts. The relevant policies are:

\*See Inland Development Constraints Areas on Summary Map.

\*\*See Developed and Potential Developable Areas on Summary Map.

- respect the preservation intent of lawfully designated historic sites or districts. (Policy 14)
- review developments proposed near existing public recreation sites in order to minimize potential adverse impacts. (Policy 27)

3) Focus State Sewer and Road Projects into Developed or Contiguous Areas: The state will encourage development in already developed areas and adjacent lands by giving priority to funding transportation and sewerage treatment facilities in these areas. If an area receives these facilities, development can occur at any density deemed appropriate by local governments providing existing state laws are met. For example, this program does not constrain local governments in determining if high rise apartments and hotels or single family homes would be most appropriate.

Experience indicates that areas not receiving major infrastructure investments will generally be developed at low densities (typically four units per acre or less, light commercial or industrial uses, open space, recreation, etc.) The principal policy is:

- Upgrade public infrastructure in existing developed areas, assigning highest priority to infrastructure which meets the needs of urban and community development centers. (Policy 35)

4) Protect air and water quality in all parts of the coastal zone: Activities which emit pollutants that significantly affect ambient air and water quality can cause significant impacts on coastal waters regardless of their location.

The salient policy here is:

- All development must conform to existing state and Federal requirements governing subsurface waste discharges, point sources of air and water pollution, and protection of inland wetlands. (Policy 34)

5) Provide open space and recreation: The remaining enforceable state concern in this area is the provision of open space and recreation sites. The acquisition priorities are incorporated into the coastal management program. For relevant policies see SRA (Recreation).

These five interests are the enforceable policies for the remaining part of the coastal zone. The resolution of issues such as protecting community character, incompatibility of land uses, and commercial or industrial zoning vs. residential zoning, will remain the responsibility of local government.

#### A PROGRAM FOR THE FUTURE: AREAS FOR PRESERVATION OR RESTORATION

Following plan approval, the Coastal Zone Program proposes the creation of Areas of Preservation or Restoration to be implemented over the next several years.

The most pristine natural Significant Resource Areas, or combinations of several such areas, will be nominated and possibly designated as Areas for Preservation or Restoration (APR), under authority granted to the Secretary of Environmental Affairs (MGLA Chapter 21A). Typically, these areas will form a complete natural system e.g., barrier beach, estuary and marsh. Recommendations for such nominations are described in the Regional Chapters, Volume II.

In order for an area to be designated an APR, it must first comprise several natural significant resources, and meet the standards for designation described in Appendix A, (draft regulation to be promulgated by the Secretary of Environmental Affairs). The standards relate to the following:

1. Public Health
2. Quality of the Area
3. Productivity
4. Uniqueness of Area
5. Irreversibility of Impact
6. Imminence of threat to the Resource
7. Economic Benefits
8. Other supporting factors

APR designation will trigger comprehensive review under the Massachusetts Environmental Policy Act of all activities, including those which would elsewhere be categorically exempt from such review; therefore, an environmental assessment form or impact statement would be required.

The salient policies are summarized as follows:

- APR's will already have their component SRA's protected as discussed under policies for significant resource areas. Thus, all previously mentioned policies apply.
- Projects in APR's will, in most cases, be comprehensively reviewed under the Massachusetts Environmental Policy Act (MGLA Chapter 30).
- New industrial pollutant discharges, filling, dredging and dumping of dredged material or other spoil will be prohibited except when the spoil can be used for beach nourishment. (Policy 2)
- Floodplain development will be conditioned similarly to that in wetlands, and in some cases restricted, up to the 100 year floodplain in order to ensure protection of marine resources and water quality. (Policies 2, 8)
- High priority will be given to wetlands restriction, scenic river designations, sign free district designation and acquisition for passive recreation use. (Policies 2, 16, 22)
- Any freshwater inland wetlands will also be restricted. (Policy 2)
- Sewering (including expansion of existing facilities) of APR's will be discouraged except where it can be

demonstrated that no previously undevelopable land will be made developable, and unless there are current water quality problems which jeopardize the marine resources of the APR. (Policies 9, 34)

--No new energy facilities or sewage treatment plants or outfalls will be permitted. (Policy 2)

Vol I p. 35 "h. coastal embayments."

Line 5 add after ... "populations of shellfish,"  
"juvenile finfish, migratory and non-migratory birds,  
and small animals."

Vol. I p. 35 "d." second sentence should read:

"These marshes are flooded by seasonal high and spring tides."

Vol. I p. 35

add a sentence at the end of "d":

"Other vegetation associated with salt marshes are Distichlis  
spicata, Limonium carolinianum, and Salicornia spp."

of unconsolidated material subject to wave, tidal, and coastal storm action. Beaches extend from the mean low water line to the duneline, beachgrass line or to the seaward edge of existing man-made structures.

- d. salt marsh:\* high marshes are low-lying coastal wetlands characterized by the presence of Spartina patens. These marshes are flooded by seasonal high tides. Low saltwater marshes are areas vegetated by Spartina alterniflora. This land is submerged by normal tides.
- e. shellfish beds:\* areas of bottom which, in combination with other environmental factors, favor the establishment and reproduction of harvestable shellfish; blue mussel, oyster, quahog and soft shell clams, bay scallops, sea clam, and ocean quahog. Bottom areas with associated Zostera marina serve in places as bay scallop nurseries.
- f. salt ponds:\* a shallow enclosed or semi-enclosed bay of saline water formed as the result of glaciation or barrier beach formation at the mouth of a shallow bay. Salt ponds are subject to fresh water influence from small streams emptying into the upper reaches of the pond or springs along the periphery and/or in the pond itself. Salt marsh vegetation usually forms a fringe around the pond.
- g. estuary:\* semi-enclosed body of water which has a free connection with the open sea within which sea water is measurably diluted with fresh water derived from outflowing fresh water rivers. In most instances, the landward extent of the mixing of fresh and salt water is shown by the presence of salt water marshes which form along the banks of the river.
- h. coastal embayments:\* marine waters that have a restricted opening to the ocean due at least in part to the formation of a barrier beach. Unlike estuaries or salt ponds there is very little fresh water influence. Coastal embayments are shallow and may support healthy stands of eel grass and populations of shellfish. Most coastal embayments support well developed salt marsh systems.

Vol I p. 36 "m. coastal viewpoints."

add at end of sentence:

"as well as resident and migratory wildlife."

(areas within the 100 year tidal flood zone that are subject to storm wave impact).

- k. erosion:\* areas where there is a loss of land along the shoreline caused either by natural forces or by the action of man. "Critical" erosion is typically defined to mean erosion of shorefront property that causes it to become unusable or imminently rendered unusable. Critical erosion is evidenced by a loss in significant recreational beach benefits, a significant loss in other public lands or facilities, significant damage or destruction of private property, or significant change in the morphology of conservation land.
- l. areas of accretion: new land or shoals that are being formed along the coast due to the deposition of silt and sand by the littoral drift.
- m. coastal view points: high points or promontories which provide views of shore lands, coastal waters, and activities occurring there.
- n. individual sites of visual importance: includes man-made sites of historic, archeological, architectural, or cultural value listed on the National Register of Historic Places. In addition, natural features designated as SRA's are presumed to have inherent scenic attributes important to the natural coastal landscape, and areas designated as Port SRA's are presumed to have visual attributes important for their interest and educational value.
- o. port areas:\* locations that include navigable channels of 20 foot depth or more, lands abutting such channels which are available for marine dependent or industrial use, and well-developed road and rail links leading to major arterial and truck routes. Such locations are also served by public water supply and sewer treatment systems capable of accommodating heavy industrial use and are separated or remote from residential neighborhoods and commercial business districts.
- p. developed harbors: sheltered harbors and navigable channels which provide mooring space, berths, slips, ramps, and docks serving a region-wide boating public, commercial fishermen, cruise boats, ferries, or light marine industry. Such harbors may also present unique opportunities for the fishing industry or for waterfront renewal and revitalization.



- q. other urban waterfronts: shoreline areas which do not presently contain developed harbors but which are characterized by extremely dense, urban residential neighborhoods or commercial development.
- r. recreational beaches: suitable, sandy beaches with adequate access which provide recreation opportunities for a region-wide public.
- s. boating facilities: public ramps, moorings and marinas which provide public access and opportunities for coastal boating and fishing.
- t. coastal related recreation: trails, campgrounds, bike routes, etc., which provide access to the shoreline or are complementary to the shoreline recreation because of their physical proximity or functions.

Note: Those significant resource areas marked with an asterisk (\*) are Geographic Areas of Particular Concern as defined by the Coastal Zone Management Act.



# 3

## COASTAL POLICIES



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## The Marine Environment

## MARINE ENVIRONMENT

### SUMMARY OF FINDINGS

The marine environment is one of the most valuable natural resources in Massachusetts. It provides a source of protein: finfish, shellfish, crustaceans, and algae. Unlike oil or coal, marine resources are renewable, provided stocks are well managed and habitats are not destroyed.

The port of New Bedford is one of the largest fresh fish ports on the east coast. Fish landed here is shipped west to market as far as the Mississippi. Massachusetts lobsters are air-freighted to California and to Europe. The southern waters of the state supply almost 90% of the bay scallops consumed in New England.

The salt marsh complexes of our coast provide a nutrient source upon which marine food chains may depend. Estuaries, salt ponds and shallow coastal embayments also provide nutrients and energy for marine life. These water bodies are areas of high primary productivity - the conversion by plants of solar energy to chemical energy - and are valuable as spawning and nursery areas for finfish, shellfish, and crustaceans.

Migratory birds, particularly waterfowl and shorebirds are also greatly dependent upon the salt marshes, tidal flats, and protected waters of Massachusetts for feeding and resting areas.

The salt marshes and barrier beaches of the state act as storm buffers for the land behind them. These same barrier beaches, along with sandy beaches, are prime recreation areas. The coastal waters of the state are utilized not only for commercial fishing but for sport fishing, recreational boating, and swimming as well. All of these activities are dependent upon clean and productive waters; a degradation of water quality would restrict or lessen their availability and attractiveness for these activities - activities upon which many coastal communities rely for income and employment.

Man's activities can degrade or destroy the biological, buffering, commercial and recreational qualities of the marine environment. If the fishery resources of the coast are to be maintained for the benefit of future generations, the coastal systems upon which they depend must be protected. Dredging and filling of salt marshes and tidal flats must continue to be halted or appropriately conditioned.

We must also guard against other adverse impacts on marine productivity: the chronic, sublethal effects upon marine organisms resulting from the discharge of hazardous substances into coastal waters, the stress of overloading semi-enclosed water bodies with nutrients from sewage treatment facilities, and in estuaries in particular,

the disruption of natural cycling and energy transport patterns through physical interference with natural water movements. Positive steps toward conditioning these activities will also serve to preserve and enhance the quality of our coastal waters upon which so much recreational activity depends.

If habitat for waterfowl and shorebirds is to be preserved and if the recreational and scenic attributes of the coast are to be kept for future generations, restriction of activities in barrier beach systems and other coastal environments will be necessary. If left intact, these environments will naturally protect existing inland areas.

Positive, more active steps must be taken to enhance the production of finfish, shellfish, crustaceans, and algae. Restoration of anadromous fish runs, promotion of extensive and intensive aquaculture, and improved shellfish management can increase the benefits accrued by man from the marine environment.

#### COASTAL ENVIRONMENTS, THEIR VALUE AND IMPORTANCE

In the following section, the various marine environments comprising the Massachusetts coastal zone are discussed in terms of their ecological significance. These environments are: salt marshes, barrier beaches, estuaries, salt ponds/coastal embayments, open coastal waters and rocky shores.

##### SALT MARSHES

The salt marsh may be divided into two major zones: the high and low marsh. The high marsh, flooded during high tides and storms, is dominated by salt tolerant grasses, primarily salt meadow cordgrass, Spartina patens. Most of the organisms found in the high marsh belong to terrestrial groups such as insects, spiders, small mammals, and many birds which use it for nesting sites.

The high marsh acts as a landward buffer for the low marsh. Fresh water drainage from uplands is slowed by the more inland vegetation and absorbed by the sediment layers of the upland-high marsh border. This aids in retaining the saline influence necessary to the maintenance of the more seaward portion of the salt marsh.

The low marsh, flooded at each tide, is dominated by salt marsh cordgrass, Spartina alterniflora, and macroalgae such as rockweed may be present. It is the low marsh which contributes the greatest amount of organic matter to coastal waters. In association with S. alterniflora are the micro- and macro- scopic algae which live on the marsh bottom and around the stems of the plants and which contribute to marsh productivity.

The organisms associated with the low marsh are primarily marine. They include polychaete worms, the filter feeding mussel, Modiolus demissus, an important phosphate cyler, and snails. Fish and crabs

"Salt marshes also play a significant role in the filtering of pollutants from surface runoff."

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enter the low marsh to feed at high tide, whereas birds and rodents are predators when the tide recedes.

The salt marsh system acts as a physical buffer. The network of roots and rhizomes binds large amounts of sediment together forming a hardened peat layer with successive years of growth. The peat layer is resistant to erosion and helps to dissipate storm wave energy that would otherwise strike low lying developed areas. (see Coastal Hazards section)

Salt marshes play a vital role in the reproduction of organic matter and nutrients and their release into estuaries and coastal waters. In terms of organic output into other ecological systems, salt marshes are among the most productive in the world. Salt marshes produce 30-50 tons of organic matter/hectare/year as compared to annual agricultural plants which may produce 20-30 tons of organic matter/hectare/year.<sup>1</sup> It is in the role of organic exporters that salt marshes reach their greatest usefulness. At least 45% of salt marsh production is removed by the tides.<sup>2</sup>

The production of organic matter begins with light energy falling on the grasses of the open marsh. This energy, through photosynthesis, is converted to organic products. At summer's end stems and leaves of the marsh plants begin to die and break off. Incoming tides collect this material, called detritus, and carry it back and forth across the marsh. Eventually, the tides carry the detritus into estuaries and salt ponds, and subsequently into coastal waters.

Throughout this transport, microbes break down the plant material into smaller and smaller particles. Marine organisms ingest the particles of detritus, digest the microbes, and egest the particles. Once back in the water, the particles are recolonized by microbes, and ingested again in a continuing recycling process until the detrital particles are completely decomposed. These detrital particles are food for deposit feeding organisms, which receive their nutrition from consuming the top sediment layers for detritus, microalgae, and bacteria. The deposit feeders are in turn food for bottom feeding fishes such as winter flounder, tomcod, and weakfish.<sup>3</sup>

Many species of economic importance depend upon this type of coastal environment during all or part of their life cycles. For example, adult winter flounder move into coves, bays, and estuaries from January to April for spawning. Larvae, hatched from egg clusters deposited on the bottom, are not very mobile and tend to stay in the general spawning area where they are dependent on marsh related food sources such as copepods, larval marine forms, and detritus. As the juveniles increase in size, the range of food species increases to molluscs, polychaetes, and euphausiids which, like the lesser components of the food chain, are dependent on the primary productivity of the marsh.

As winter flounder get larger, they move out of the spawning and nursery areas in the summer to nearshore waters or considerably offshore and return to these coastal areas to spawn in late winter to

early spring. During this movement they are available to species higher up in the food chain including man, himself.<sup>4</sup>

#### BARRIER BEACHES

Barrier beaches are built by longshore transport of sand from up-current beaches. Lying between barrier beaches and the original shoreline are coastal embayments, estuary mouths or salt ponds, and frequently associated with them are saltmarsh-tidal flat systems.

When unaltered by human activity and development, barrier beaches are among the most dynamic of coastal environments, constantly being reshaped by wind and wave forces and the effects of the slowly rising sea level. Sand is brought to barrier beaches by the littoral drift (currents parallel to the shore), washed up on the beach face, and then transported via wind landward when dry. Beach grass traps the sand and stabilizes dunes formed by wind transport. Dune sand can be redistributed by wind or overwash (the overtopping of the dunes by sea water during storms) and may be deposited in backshore areas or contribute to marsh development. Inlets may also be periodically formed when storms breach the dunes. If unaltered by human activity, inlets may eventually be closed by sand deposited by the littoral current. Thus, the barrier beach systems may be constantly shifting in shape and size.

Barrier beaches act as seaward buffers for the semi-enclosed water bodies, marsh systems, and inland areas behind them, maintaining necessary levels of salt-fresh water mixing and the transport and deposition of bottom sediments. Barrier beach systems and the marsh-flat systems usually associated with them are also extremely important as nesting areas for terns, gulls and other species as well as migratory stopover sites for many shorebirds. These shorebirds feed along the exposed flats and among the marsh grasses protected by the barrier beach.<sup>5</sup>

#### ESTUARIES

An estuary is a semi-enclosed coastal body of water which has a free connection with the open sea and is thus strongly affected by tidal action. Within the estuary sea water is mixed and measurably diluted with fresh water. Estuarine systems may include other coastal environments such as salt marshes, mud flats, eelgrass beds and/or barrier beaches. The major estuaries in Massachusetts are shown on the accompanying map.

Because of the shallowness of the water in estuaries, light penetrates throughout most of the water column and water temperatures are warmer than in deeper, more open coastal water. Land runoff from fresh water inflow and organic matter produced by salt marshes supply carbon, nitrogen, and phosphorous compounds essential to marine productivity.

Estuaries also provide physical environments which support a variety of habitats for all types of marine life. In general, most estuarine bottoms consist of discrete areas of clay-silt, clay-silt sand, and sand-rock substrate. These bottom types in combination with

the availability of nutrients, the water velocity and salinity regime, determine the distribution of organisms within the estuary. For each habitat, the organisms living there have developed strategies for survival.

The clay-silt bottom is located where weak currents exist, which allow for the settling of fine substrate particles and organic matter. The upper few centimeters of this bottom are easily moved as detritus and broken fragments of seaweeds are continuously deposited.<sup>6</sup> This deposition makes clay-silt bottoms high in organic content.

The clay-silt community is composed primarily of deposit feeders. Deposit feeders ingest particles of organic matter found in or on the sediment layers of the bottom. Since currents are low here, organic matter settles out, providing nutrition for a large number of deposit feeders. Some of the most common organisms of this community are the bivalves, Nucula proxima, the polychaete worm, Nephtys incisa, and a variety of other polychaetes and amphipods.

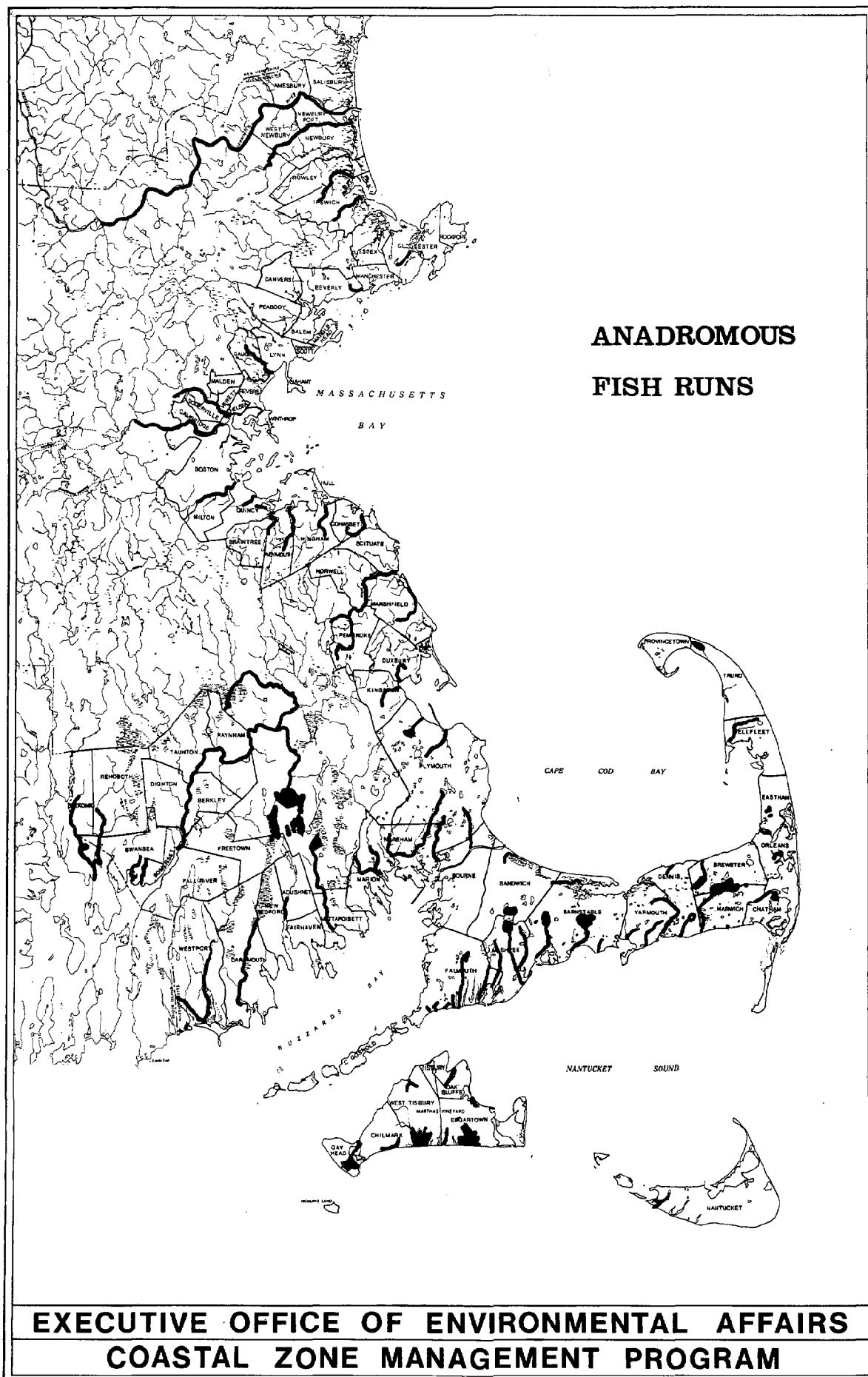
Eelgrass establishes itself where the water velocity is low enough to allow its root system to take hold and is usually associated with clay silt bottoms. Benthic vegetation such as eelgrass stabilizes sediments and reduces turbidity which would reduce light penetration. This stabilization of sediments by eelgrass aids in enhancing nutrient cycling within the estuary. Reduced current flow allows for an oxygen-less (anaerobic) sediment layer in which microbial degradation of chemical compounds takes place. The end products of this degradation are made readily available for uptake by plants and other marine organisms. These chemical reactions, since they have taken place in anaerobic sediments, do not tax the dissolved oxygen concentration of the estuary, which at times can be limiting to biological activities.

Beds of eelgrass provide habitat for larval and juvenile fishes and may also provide a surface for shellfish spat attachment, particularly for the bay scallop. Sessile organisms, such as hydroids, may also attach to eelgrass stalks and gather food from surrounding water. Eelgrass plants die and decay each year, providing a vital source of organic matter for consumption by deposit feeders, and for transport throughout the estuarine system and into coastal waters.

Clay-silt bottoms when either exposed at low tide (intertidal) or still covered with water at low tide (subtidal) comprise a mudflat. The most common inhabitants of mudflats are the soft shell clam, Mya arenaria, the clam worm, Neries spp., mud crabs and mud snails, and seaweeds including sea lettuce, Ulva lactuca, and enteromorpha, Enteromorpha intestinalis.

Substrates consisting predominately of clay rather than sand offer more surface area for binding by organic matter. Therefore, clay-silt bottoms act as chemical "sinks," concentrating nutrients or chemicals within the sediments.<sup>7</sup> Certain seaweeds inhabiting clay-silt substrates also may act as receptors for much of the chemical, or nutrient, load produced by salt marshes. Some scientists theorize that these seaweeds are stimulated to release nutrients on the incoming and outgoing tides.<sup>8</sup>





Clay-silt-sand substrates are located in areas which are influenced by faster moving water currents than clay-silt areas. The clay-silt-sand community is made up primarily of filter feeders, organisms which pump water through their systems and remove microscopic algae and organic matter. These organisms feed on food particles suspended in the faster moving water, while organisms inhabiting clay-silt areas are dependent on deposition of food particles. Some of the dominant organisms in this community include amphipods, quahaugs and razor clams, and polychaete worms.

The clay component of clay-silt-sand substrate is significantly less than in the clay-silt substrate. Therefore there is less nutrient adsorption; the substrate supports fewer organisms to rework the sediments and resuspend some of the sediment-bound nutrients.

Sand-rock substrates are found in areas where there is an active current of water; the current velocities caused these heavier particles to be deposited here. Sand-rock substrate is oftentimes located at the mouths of estuaries and most commonly in front of a beach system. Since these areas are too unstable for many deposit feeders, most organisms found there are mobile: crabs, small shrimp and conchs.

The abundance of benthic and pelagic life in shallow water bodies attracts many fish species which spend all or part of their life cycle here. Fishes such as sticklebacks, killifish, and silversides spend all of their lives in an estuary and are important food fish for other fishes. Winter flounder, 4-spot flounder, weakfish, tomcod and sand lance utilize estuaries as spawning and nursery grounds.

Bluefish and striped bass are attracted to the mouth of estuaries because of the abundance of menhaden and other bait fish. Anadromous fish species, such as alewives, blueback herring and shad utilize estuaries in their run to fresh water spawning grounds, and the juveniles use the estuaries as nurseries during outmigration.

#### SALT PONDS

In Massachusetts, salt ponds are found on the southern and eastern side of Cape Cod in Buzzards Bay, and the Islands of Nantucket and Martha's Vineyard. Some were once fresh water bodies, and all are characterized by brackish water and a barrier beach system. Salt ponds are shallow water bodies affording light penetration to the bottom throughout most of their area, supporting dense stands of eelgrass and high shellfish productivity. Fishes commonly associated with salt ponds include the hogchoker and the white perch. The American eel and the alewife are also common to salt ponds, the former spending a few years in the fresh water source during maturation, the latter using salt ponds in its run to fresh water spawning areas. Salt ponds are typically fringed by Spartina alterniflora but rarely bordered by a more developed marsh system.

#### COASTAL EMBAYMENTS

A coastal embayment is a semi-enclosed body of water with a free connection to the ocean in which sea water is not significantly diluted

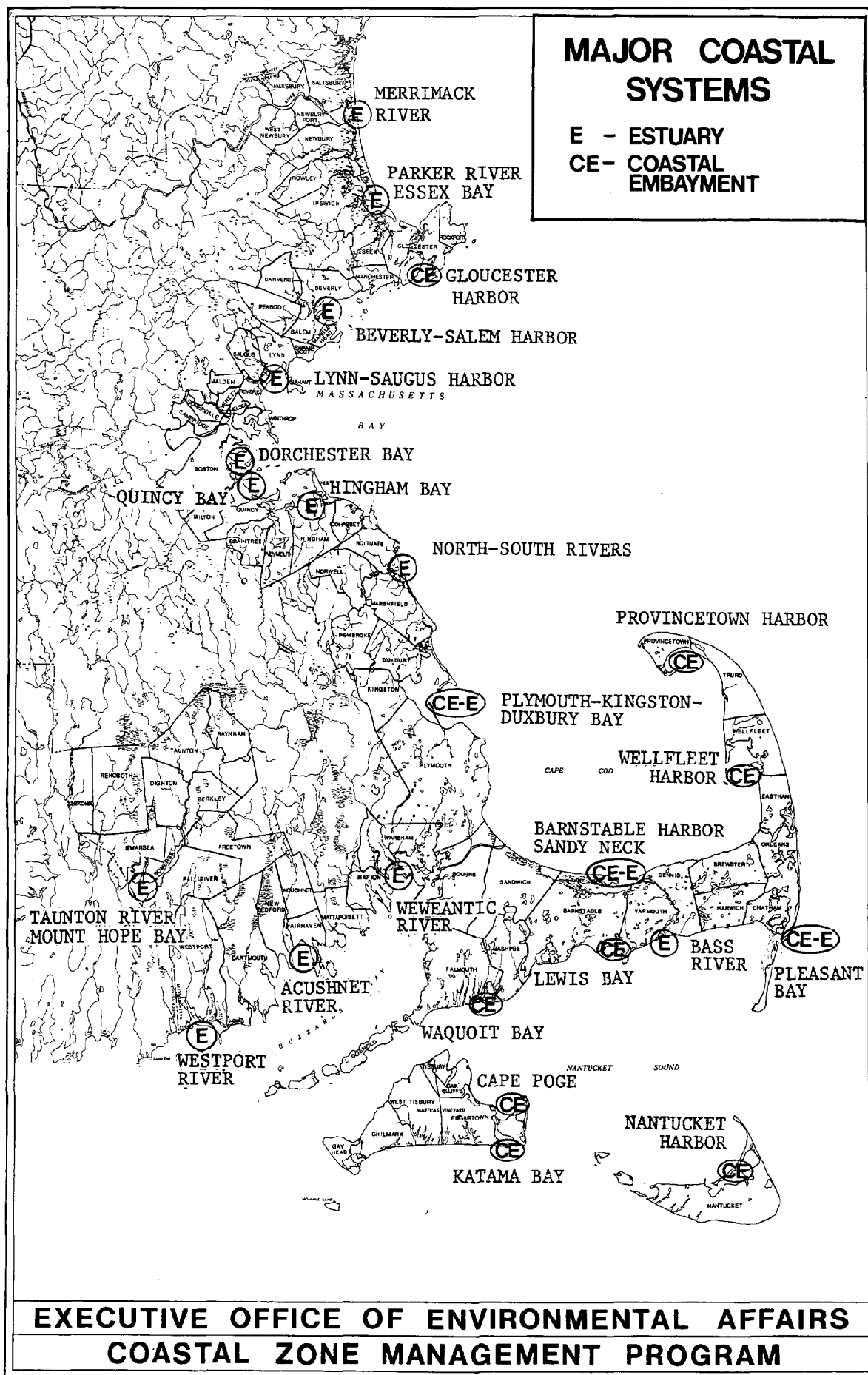


Figure 2 50

with fresh water. Most embayments are shallow and some support eelgrass stands and populations of shellfish. Many embayments have well developed salt marsh systems and may or may not be associated with an estuary. (See preceding map.)

Productivity, nutrient cycling and benthic communities of salt ponds and coastal embayments are similar enough to estuaries that the reader is referred to that discussion for further detail.

#### OPEN COASTAL WATERS

There are two major surface water circulation patterns which affect the coast of Massachusetts. The general and seasonal variation of water movement along the coast is influenced by a combination of factors: 1) amount of river run-off, and its modification of horizontal salinity gradients; 2) horizontal temperature gradient; 3) frictional drag of the wind; and 4) effect of Coriolis force on tidal motion in restricted waters.

Figure Numbers refer to accompanying map.

FIG. 1 - The first pattern is a counter clockwise water current (gyre) in the Gulf of Maine. In the winter this gyre flows southerly along the eastern side of Cape Cod and into Great South Channel which lies between Nantucket Shoals and Georges Bank.

FIG. 2 - In the spring this gyre encompasses all of the Gulf of Maine and circulates water from the Scotian Shelf and Brown's Bank.

FIG. 3 - During the summer it flows northerly into the Bay of Fundy or westward from southern Maine into Massachusetts Bay and diverts either into Cape Cod Bay or easterly to Georges Bank.

FIG. 4 - By autumn the southern side of the gyre breaks into a drift across Georges Bank.

The second major surface water circulation pattern is a clockwise gyre originating on Georges Bank.

FIG. 5 - In the winter this water current has a westerly flow across Great South Channel circulating water around Nantucket, the south side of Cape Cod, Martha's Vineyard and into Buzzards Bay.

FIG. 6 - By spring the northerly side of this gyre converges with the Gulf of Maine gyre and flows south. In the summer the eastern side veers southerly offshore.

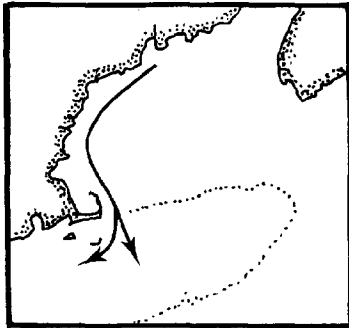
FIG. 7 - By autumn the western side breaks down into a westerly and southerly drift. A bottom water circulation pattern tends to bring water back towards the shore and may carry some sediments with it.

FIG. 8 - In the Gulf of Maine gyre, affecting Cape Ann-Ipswich Bay, Massachusetts Bay and Cape Cod Bay, the bottom drift next to the coast tends to flow directly to shore. Further offshore, in deeper water (greater than 100 meters), the bottom drift tends to parallel the shore.

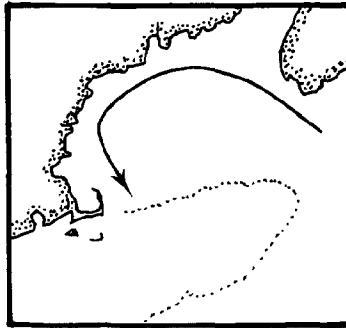
FIG. 9 - The eastern side of Cape Cod is influenced by the clockwise bottom drift of Georges Bank. There is a net drift to the west and across Great South Channel.

FIG. 10 - From Great South Channel to southern Rhode Island there is a net bottom drift in a northwesterly direction. This influences Nantucket, Martha's Vineyard, the south side of Cape Cod and Buzzards Bay.<sup>9</sup>

**FIGURE:**



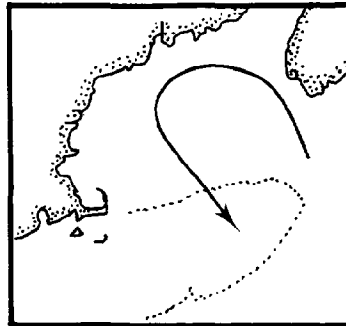
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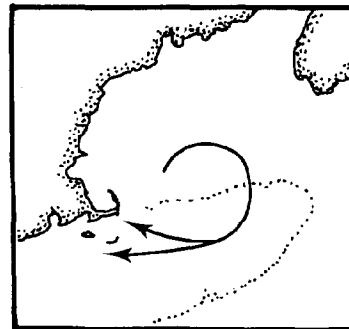
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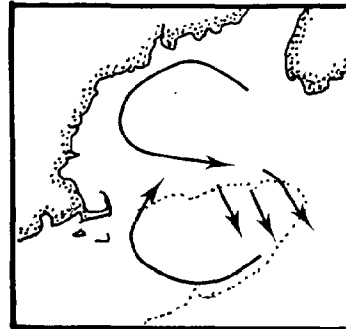
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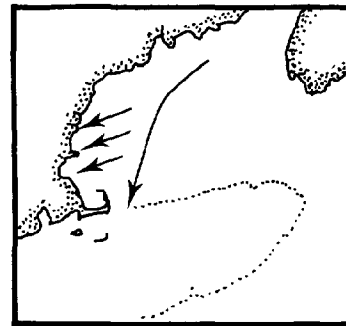
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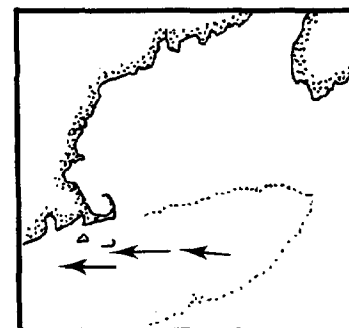
**6**



**7**



**8**



**9**



**10**

Water circulation patterns, temperature and salinity gradients and bottom types help to determine the marine organisms living off the coast. Most of the bottom of Cape Ann-Ipswich Bay is sand. Certain areas within the Bay are spawning locations for haddock and red and white hake. Massachusetts Bay is characterized by a sand and sand-gravel bottom, and certain bottom areas are being considered for sand and gravel mining. Atlantic herring spawn in the Bay, and Stellwagen Bank is an important in-shore spawning site for haddock.

Cape Cod Bay has a center of mud, with sand along the Cape Cod rim, beyond the 60 foot curve. There are a few rocky areas and a large shoal on the eastern side, Billingsgate. Nantucket and Vineyard Sounds have sand bottoms and some shoal areas along the northeastern side of Martha's Vineyard and between Martha's Vineyard and Nantucket. Buzzards Bay has a central strip of mud and sand with rock along the northwestern and southeastern sides. Studies seem to indicate that Buzzards Bay is an important area for lobster spawning and may contribute a large portion of larvae to Cape Cod Bay via the Canal.<sup>10</sup> Fish such as winter flounder, cod, striped bass and bluefish are caught in these waters.

The bottom along the eastern side of Cape Cod is sand and gravel, while the bottom south of Nantucket and Martha's Vineyard is sand with areas of mud. Extensive beds of ocean quahogs and sea clams are common to this part of the Massachusetts coastline. There is a large shoal area between the two islands, as well as shoals off the southeastern end of Nantucket.

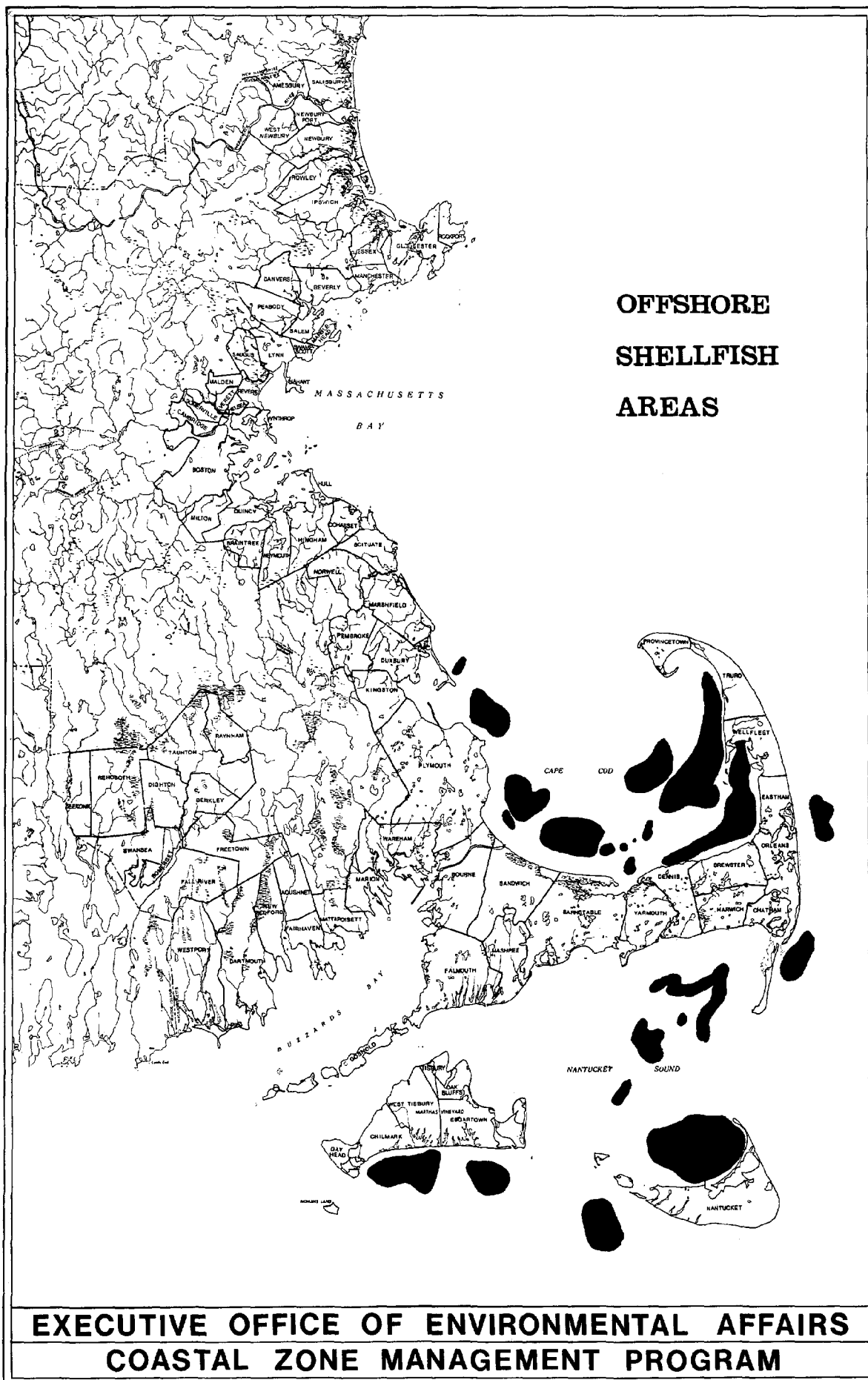
South of Cape Cod, Massachusetts waters are influenced by the warm water of the Gulf Stream; surface water temperatures reach 20C in summer months. North of the Cape is influenced by a cold water current, the Labrador. Surface water temperatures rarely reach 20C in the summer. This difference in water temperature influences the distribution of marine species north and south of the Cape. This difference also influences the distribution of terrestrial flora and fauna.

#### ROCKY SHORES

The rocky shore of Massachusetts extends from Rockport to Scituate. In the geologic past the north shore was composed of granite hills which have been worn down, while the more southern rocky coast is glacial in origin. The rocky shore is one of the more extremely fluctuating of coastal environments, and some plants and animals are uniquely adapted to survive there.

Rocky shore life is distinctly zoned, from the splash zone of the rocks to the subtidal zone. The splash zone is that area which is not inundated by water but sprayed. Blue-green algae and lichens make up the splash zone and give a black appearance to the rocks. The next zone is the balanus, comprised primarily of filter feeding arthropods (barnacles).

Below the balanus zone is the brown zone, dominated by rockweed and knotted wrack. This zone is partially exposed at low tide. Here also are found blue mussels, dog whelks and periwinkles.



Below the brown zone is the red zone, the beginning of the subtidal zone. Here are found the red seaweeds Irish moss, sea laver and encrusting algae. Below the red zone in the deeper subtidal area are the kelps. These large brown algae comprise the last zone, the laminarian. Here also are found sea squirts, species of starfish and the sea urchins. Epiphytic organisms like the bryozoans and hydroids live attached to the fronds of the kelps and to rocks.

The organisms living here have adapted to rigorous conditions, because they are continually subject to the ebb and flow of the tide and wave impacts. All the organisms in the black, balanus and brown zone are exposed to the sun and dry air for hours each day. This exposure, although short, causes water loss and reduction or cessation of photosynthesis.

The plants of the rocky shore are fairly resistant to mechanical damage, though abrasion from sand in the water can be responsible for keeping algae from the rocks near sandy beaches. The algae of a rocky shore are sensitive to reduced light intensities and will soon die if subjected to high turbidity levels.<sup>11</sup>

#### MAJOR ACTIVITIES IMPACTING COASTAL ENVIRONMENTS

This section discusses certain activities and their effects upon the coastal marine environment:

- Physical Alteration
- Sewage Treatment Facilities
- Power Plant Siting
- Hazardous Substances
  - PCB's
  - Heavy Metals
  - Chlorine
  - Oil in the Marine Environment
- Hazardous Chemical and Solid
  - Waste Disposal
- Pesticides
- Septic Systems/Cesspools
- Recreational Boating
- Dredging/Dredge Disposal
- Offshore Sand and Gravel Mining

#### PHYSICAL ALTERATION

"The most productive zone in many estuaries is the zone of transition including the intertidal and adjacent subtidal areas. This is especially true where there is a minimum of wave generated turbulence and the sediments are stabilized. Such rich bands are found along the edges of salt marshes and may consist of tidally exposed mud banks. These intertidal banks and mudflats are more productive than most of the world's oceans."<sup>12</sup>



### Bulkhead Construction

As discussed earlier, intertidal and adjacent subtidal areas are usually areas of high standing crops of organisms, and provide the initial habitat for many post-larval and juvenile fishes and crustaceans.

These shallow intertidal and subtidal fringe areas can be completely destroyed by bulkhead construction since the purpose of such construction, usually, is to provide deep water for boat access. Eliminating the shallow water areas reduces the concentration of detritus, the production of plankton, and, since the photic zone no longer extends to the bottom, the number of benthic organisms inhabiting the area.

Construction of bulkheads may also adversely alter natural circulation and create stagnant areas which can develop into "sinks" for pollutants. Over time, adjacent productive areas would be seriously affected. Further, any type of marine construction which may restrict or prohibit the tidal flushing of salt marshes will cause slow death to the marsh and a drastic reduction in species diversity and biomass in surrounding waters.

### Filling

The filling of salt marshes and intertidal areas is ecologically damaging. As discussed in an earlier section, salt marshes are invaluable contributors to coastal productivity, through tidal flushing and transport of organic matter into coastal waters. Filling of a salt marsh kills the plants and halts export of organic matter, as the tides can no longer flush the area. Marsh filling also destroys the natural storm buffering capability of this area.

The filling of intertidal areas reduces productivity as these areas collect organic matter and support a community of organisms that is grazed on by fishes of many species and crustaceans. The covering of the bottom eliminates the normal bottom component of the biological energy cycle.

Filling is not only detrimental in that areas which contribute directly to biological productivity are destroyed, but filling also reduces the amount of area within a water body. This reduction in area can result in major changes in currents, circulation patterns, and flushing.

Filling creates shoal areas in intertidal areas. These shoals will slow the rate of flow of the tide, reducing the flushing capacity of the water body. A reduction in flushing, over time, will cause the body of water and its sediments to retain more of the introduced pollutants than would otherwise be retained.

Filling also can cause dramatic changes in current patterns within a water body. This change is caused by a net reduction in the overall surface area of water, as shore areas are filled and bulkheaded.

### Ditching

The ditching of salt marshes for mosquito control is another activity which affects the tidal flow in marshes. Ditching began in the Great Depression days as a federal employment program and is continued today by county mosquito control projects. The purpose of ditching is to drain the high marsh, dominated by Spartina patens, in order to reduce areas of stagnant water where mosquitoes breed and allow fishes which prey on mosquito larvae, such as sticklebacks and killifish, to enter the marsh on the tide.

Marsh ditches are usually cleaned out mechanically every three years. The ditch material is piled to one side or the other of the ditch. This deposition has two adverse effects: (1) the plants underneath are killed, and (2) the spoil is colonized by plant species not found there before since the area is no longer flooded on each tide.

If ditch spoil is improperly placed, it can create a depression which will trap salt water and create a panne. A panne is an area within the marsh which has a salt concentration too high for Spartina alterniflora or patens. These plants die and more salt tolerant plants, such as flasswort, colonize the panne. Along the sides of the ditch, spoil will slump towards the center, and S. alterniflora will colonize the slopes of the ditch.

From an ecological standpoint, evidence neither supports the premise that salt marsh ditching is beneficial, nor indicates it is harmful to the salt marsh community, if properly done. Environmentally, ditching of salt marshes for mosquito control is significantly less harmful and dangerous than the use of pesticides for control.

### Alteration of Fresh Water Inflow

Fresh water inflow into estuarine systems is as important as salt water. Restriction or termination of fresh water inflow can have a number of serious effects. Less fresh water inflow results in increased salinity of waters within an estuary; this increase results in a loss of the area as a nursery ground for fishes and other organisms whose tolerance for saline waters in early life stages is low. Also, many of the forage organisms associated with estuarine waters cannot tolerate increased salinity levels.

Spawning areas for anadromous fish species such as alewife, shad, and blueback herring, could be lost if fresh water inflow were restricted.<sup>13</sup> More detrimental, however, to anadromous fish populations are physical barriers, such as dams, constructed in rivers and streams used as runs. This loss of spawning area reduces the population numbers of these fish species.

Highway construction often impedes fresh water inflow into estuarine systems. Small feeder streams can be filled and dammed, inhibiting natural flow, and permanently removing upland waters as anadromous fish spawning areas. At other times, culverts are used underneath a highway as replacements for the natural stream bed. These

Vol. I p. 58 at end of 1st paragraph of sewage treatment facility section:

"In other cases, facilities may be located upstream where they discharge liquid effluent into water courses which eventually flow into coastal estuaries."

population reduction through destruction of spawning grounds.

Materials carried into estuaries by river flow and the plankton within the estuary, are two important food sources for fish. During the spring and autumn there are peaks in both sources which coincide with migratory fish movements. The construction of dams on rivers decreases the amount of fresh water flow into estuaries, and evens out the flow over time, eliminating the river "flooding" cycle and the food made available during fish migration.<sup>14</sup>

An increase in fresh water inflow to estuarine systems will also have adverse effects. Semi-permanent and permanent increases in fresh water inflow can be caused by an increase in highway and paved surfaces near a river and its estuary. Run-off from these impermeable surfaces adds more fresh water to the system, as well as transporting petroleum products and road salt. A change in the salinity regime will cause a change in species composition. Changes in species composition of resident populations will be reflected in changes in those organisms which feed upon them.

For example, decreases in salinity of less than five parts per thousand in some cases, can result in a loss of bay scallops and smaller molluscs. If salinity changes are sustained the loss of molluscs may result in a decrease in fish such as winter flounder.

#### SEWAGE TREATMENT FACILITIES

A national effort to improve water quality has resulted in the construction of sewage treatment facilities in a number of communities. In most instances plants which have been constructed in coastal areas, or are in the final process of being constructed, use ocean outfalls to discharge liquid effluent from the treatment process.

This liquid effluent contains phosphorous and nitrogen compounds, which are the primary nutrient sources for marine life. Increased levels of phosphorous and nitrogen compounds can produce more phytoplankton resulting in higher zooplankton productivity and more food for larval fishes and shellfish.

Unfortunately this is not always the case. The effects of adding these two nutrient sources is dependent upon many variables: circulation pattern and flushing rates, bottom type, dissolved oxygen concentration of the receiving water body, to name only a few.

Phosphorous and nitrogen compounds are recycled in marine systems through bio-deposition, excretion, and decay. High clay content sediments, as found in estuaries, help recycle these nutrients through adsorption. Sediment bound nutrients in coastal waters are recycled through upwelling generated by high wind and wave action.

At each recycling step these two elements are found in specific chemical form, and can only be utilized by certain organisms. For

example, nitrogen may be in the form of ammonia, a product of excretion. Certain bacteria species can oxidize ammonia to nitrates or nitrites. Nitrogen, in the form of nitrates and nitrites, is now available to certain marine plants for uptake. These plants are then eaten, and nitrogen again enters the system through excretion in another form.

In marine systems, nitrogen is a limiting factor, and is utilized as quickly as it is made available. Therefore, organisms which can utilize it in its earliest form have the advantage.

Most of the "food" phytoplankton species require nitrogen in the form of nitrite; while the more opportunistic, less "usable" phytoplankton species can use nitrogen in the form of urea, uric acid, or ammonia.

Increased nitrogen loads in the marine system, in the form of ammonia, stimulates the production of those phytoplankton species which can readily utilize nitrogen as ammonia. Increases in both phosphorous and nitrogen compounds can enhance the productivity of receiving water bodies. But, over a period of time this increased enrichment, termed eutrophication, causes oxygen depletion and subsequent adverse effects.

The degree to which these effects are caused will vary with the physical and biological characteristics of the water body in which the outfall is located.

Some authorities claim that discharging treated sewage wastes into open coastal waters is acceptable. The thought is that the currents and other physical characteristics of these waters are such that phosphorous and nitrogen compounds would be quickly diluted and dispersed.

The distance from shore in combination with the water currents are critical factors in determining the best outfall location. Transport of waste material back towards shore can cause contamination and closure of public bathing beaches and shellfish beds.

The ability of estuaries/salt ponds/coastal embayments to retain natural supplies of nutrients contributes to their high productivity. Because of their retentive ability, a result of their restricted openings to the sea and/or the flushing characteristics controlling fresh water inflow and tidal exchange, these water bodies are already heavily saturated with nutrients. Increasingly greater nutrient loads will cause a marked decrease in biological productivity over time. Organisms which are more tolerant of increased phosphorous and nitrogen loads would begin to dominate within a community, decreasing the species diversity. "In estuaries where enrichment is excessive fish may not die but a fishery may decline because suitable food organisms are unable to survive the unfavorable conditions which result from the excessive addition of nutrients."<sup>15</sup> Therefore, they are least desirable as receivers of sewage effluent.

Another constituent of sewage effluent, fecal coliform bacteria, is of concern when locating sewer outfalls. Coliform bacteria, which flourish in the intestinal tract of humans, are a necessary component of digestion, and are excreted with unusable fiber. Coliform bacteria, easily detected and cultured, are used as indicators of the presence of viruses and other bacteria. These viruses and bacteria may be vectors of harmful diseases, such as hepatitis, which can be contracted through consumption of contaminated shellfish.

Total coliform counts are taken periodically in coastal waters, and if above a median of 70/100 ml, the harvesting of shellfish is restricted and may be done only with required depuration, and bathing beaches are closed to the public. For example, the shellfish areas around greater Boston are closed due to coliform contamination from the treatment facilities on Deer and Nut Islands. While these two facilities are the major contributors to pollution in the greater Boston area, combined sewer overflows, storm drains, and untreated wastes are also serious polluters. The lack of harvest of shellfish beds over a period of time can and does cause massive mortalities causing the destruction of shellfish beds.

The Commonwealth of Massachusetts cannot afford the continued degradation of biological communities in its coastal waters due to poor citing of sewage treatment facility outfalls.

#### POWER PLANT SITING

Significant increases in coastal water temperature in Massachusetts can result from the discharge of cooling waters used in power generation. Most of the power generating stations are located in the coastal zone in this state. Water for cooling is removed from coastal waters and discharged at temperatures which may exceed 7 to 14C (15-25F) above ambient. A temperature increase may affect an organism directly by changing physiological or behavioral processes, or it may affect it indirectly by changing some part of the environment on which the organism depends.<sup>16</sup>

The degree of thermal effects is dependent upon a combination of variables. The discharge of heated water into an estuary or embayment is more critical than discharge into truly open coastal waters. Ambient water temperatures in estuaries and embayments are higher than more open coastal waters. Ambient water temperatures in estuaries and embayments are higher than more open coastal water, partially due to shallowness and flushing capacities. Therefore, estuarine organisms, particularly during the warm months, are in waters which are close to the organism's upper temperature limits. The combination of heated discharge, oxygen concentration, and salinity, as well as mixing time for the effluent determine the severity of impacts of temperature increases on marine organisms.

Discharge of heated effluent may lower the dissolved oxygen concentration in the system, placing stress on the biological community. Location of thermal discharges in estuarine systems can influence the seasonal movements of certain fish species. Many fish enter estuaries to spawn, and the young use these waters as a nursery. In the

late summer and early fall adults and juveniles of some species begin to move out into cooler oceanic waters. Thermal discharges can create a temperature barrier of a few degrees or less which will effectively block this out migration of fish.

Open coastal water discharge locations pose less serious problems to marine organisms than estuarine locations. Increases in temperature are more localized, and, in general, there is a larger volume of water flowing past the site, facilitating mixing of heated with ambient water.

Entrainment and entrapment of marine organisms at a plant's intake is more deleterious than thermal discharge. Larger fish and invertebrates are entrapped on mesh screens located in front of the intake, but egg, larval, and juvenile stages of many organisms, as well as adult forms of smaller organisms, are taken into the plant and passed out the discharge. Studies seem to indicate that for some fish species, entrained egg mortality is low, but larval mortality is high. The larvae are mechanically damaged as they pass through the plant. Egg mortality is more time- and temperature-dependent and the development stage of the egg is an important factor. Entrainment can be particularly serious during spawning seasons, especially at plants which are located in estuaries or the mouths of estuaries and embayments, where spawning takes place.

The physical configuration of the intake and the water velocity in part determine the degree of entrapment at a plant intake. A large cross sectional area and a low water velocity will minimize entrapment. A velocity of less than 1 ft./sec. is satisfactory, although the state recommends 1/2 ft./sec. Most adult fish can swim against the water current at the intake. For those organisms which cannot, entrapment mortality can be minimized by routing traveling screen wash canals back into surrounding waters.

Temperature increases may enhance growth during times of the year when ambient temperatures are cold, particularly during the fall, winter, and early spring. The controlled use of thermal effluent for aquaculture may be beneficial. The culture of some marine organisms in warm water increases the growth over time; the metabolic rate remains high and the animals feed constantly. Therefore, an organism raised in warm water will be larger and will usually weigh more than an organism of the same species and age raised in ambient water. One difficulty with heated water culture is the increased chance of disease and mortality among the organisms. For certain species of marine organisms, aquacultural techniques may be used to replace that portion of the population which is lost due to the operation of the power plant.

#### HAZARDOUS SUBSTANCES

##### Polychlorinated Biphenyls (PCB's)

PCB's are used as insulating media in the production of transformers and capacitors. PCB's are also found in such products as carbonless carbon paper, paints, textiles, and hydraulic sealants.

PCB's are relatively insoluble in water and concentrate in bottom sediments and the food chain in marine environments. Through bioaccumulation PCB's are concentrated in animal tissue at levels up to 40,000 times greater than environmental background levels.<sup>17</sup>

PCB contamination causes a wide variety of problems within marine organisms, from physiological dysfunctioning, to reproductive failure, to death. In New York state alone, PCB contamination in the Hudson River has closed a \$1.25 million per year commercial striped bass fishery.<sup>18</sup> New Bedford Harbor has been identified by EPA as having the highest concentrations of PCB's of anywhere in the United States. The only known acceptable disposal method is incineration at temperatures exceeding 1316C (2400F).

### Heavy Metals

Heavy metals are used extensively in metal finishing and electroplating industries. These metals can bind to components of living tissues. This binding alters or prevents the functioning of tissue components.<sup>19</sup>

This tendency of heavy metals to bind with cell components makes it difficult for an organism to rid its system of the metal. Consequently, the metal concentration increases in the tissues and is eventually passed through the food chain. A heavy metal concentration may not be lethal to adult forms, but may be lethal to larvae and juveniles.<sup>20</sup>

Over time, heavy metals in a marine system can cause a decrease in the number of species and population numbers. Species which can tolerate higher concentrations of a metal will begin to replace more sensitive organism. Forage species whose food includes these more tolerant organisms will replace other forage species. These more tolerant organisms are generally those which are less valued by man than the more sensitive species.

Plants take up heavy metals through their root systems. Some plants such as eelgrass are not harmed, but the metals are cycled into the marine system when the plant breaks down into detritus. Some heavy metals are harmful to Spartina alterniflora. Copper and methyl mercury initially inhibit growth and eventually cause high mortality in these plants. High lead concentrations will inhibit the growth of Spartina.<sup>20</sup>

Sediments of high organic content, such as clay-silt bottoms, also tend to concentrate heavy metals. These sediments provide surfaces which absorb heavy metals. Deposit feeders work over the sediments and concentrate and/or resuspend these metals, in effect recycling toxic substances through the marine food chain. Activities such as dredging which remove and cause suspension of sediments also cause some recycling of toxic substances.

### Chlorine

There are two common uses of chlorine in coastal areas. Chlorine is used at power plants as a defouling agent, aimed at preventing bivalve setting in condensor tubes. It is also used as a disinfectant in sewage treatment facilities as a last step in reducing bacterial and viral concentrations.

The metabolic pathways of chlorine and chlorine compounds are not known, but some lethal concentrations for marine organisms have been established.<sup>22</sup> In constant flow bioassays being conducted at the Woods Hole Oceanographic Institution, initial results indicate that fish and crustaceans have different responses to chlorine and chlorine compounds.

after "combustion of fuel," sentence should read  
"untreated sewage effluents, and land run off."

~~fish, but no apparent response to crustaceans or bivalves.~~  
chlorine compounds are longer acting toxins for crustaceans and bivalve larvae than for fish.<sup>23</sup>

The residual concentration of chlorine and chlorine compounds differs for power plants and sewage treatment facilities, as the purpose of chlorine use differs for these two facilities. Power plants are allowed a maximum residual chlorine concentration at the discharge of 0.1mg/l. On the other hand, sewage treatment facilities are required to have a minimum residual chlorine concentration of 1.0mg/l at the outfall. At present, there appear to be no scientific data to support this minimum requirement at sewer outfalls, which is ten times the maximum allowable concentration at power plant discharges. It is recognized, however, that there is more of a demand for chlorine in the disinfection process where there is a higher organic content in the receiving water body.

#### Oil in the Marine Environment

Between 37.5 and 75 million barrels of crude oil and petroleum products are introduced into the world's oceans annually. Eighteen thousand barrels are discharged or spilled annually into New England ocean waters.<sup>24</sup> Catastrophic accidents account for only a small percentage of the oil that enters the oceans. The majority of oil is introduced by routine discharge from tankers and other vessels, minor accidents in port or on the seas, accidents in exploration and production, pipeline breaks, incomplete combustion of fuel, and untreated sewage effluents. Most of these events occur onshore, in port, or in coastal waters where biological productivity is greatest.

Depending on its source, oil has varying chemical characteristics.<sup>25</sup> Refined oil has a higher percentage of aromatics, which are the more toxic compounds. After being spilled or discharged into the environment, oil can undergo weathering in four ways: (1) evaporation; (2) dissolution; (3) biological degradation, and (4) chemical degradation.

Both evaporation and dissolution selectively remove lighter, more volatile hydrocarbons. Dissolution also removes the more soluble aromatics. Microbial attack affects the simpler, straight- and branched-chained hydrocarbons and not the cyclic and aromatic compounds. On a weight by weight basis, oil that has weathered by microbial decay is more toxic than the original mixture because the toxic aromatics have not been degraded.

Chemically, oil is altered by oxidation of aromatic hydrocarbons. This occurs to a small extent and is the least important of the weathering processes.

There are several mechanisms by which oil and oil products can cause environmental damage: (1) immediate lethal toxicity; (2) smothering; (3) chronic sublethal effects on physiological and behavioral processes; (4) incorporation into organisms and spread through food webs; and (5) changes in habitats.

Immediate lethal toxicity affects a wide range of organisms. The effects are more pronounced when the oil has a higher aromatic content. The September, 1969 spill of 650,000 liters of oil with 41%



aromatic content at West Falmouth, caused an immediate, massive kill of crabs, lobsters, and other crustaceans, molluscs, fish and polychaete worms.<sup>26</sup> Mortality was 95%. The spread of contaminated sediments compounded the problem causing continued, extensive mortality. By killing virtually all of the benthic community, the oil caused destabilization of sediments which were then mechanically transported. Seven years later, the sediments at Wild Harbor still carry oil from the spill, and local shellfisheries have remained closed.

The toxicity of hydrocarbons is not well understood. Oil has been found to be lethal to a variety of fish, molluscs, crustaceans, and other marine organisms. Oil presents a particular danger to the eggs and larvae of fish and other organisms. Eggs and larvae floating in surface waters are exposed directly to oil and can be very quickly killed. Oil is also toxic to the marsh plants Juncus gerardi, Spartina patens and Spartina alterniflora and the brown alga Larminaria.

In addition to toxicity, animals and plants are killed by smothering and coating. This is most evident in sea birds, particularly diving birds. A coating of oil causes a bird's feathers to lose their insulation and consequently, an oil-covered bird can freeze to death in any season. Furthermore, oil can result in a loss of buoyancy and cause birds to drown. Sea bird populations are, as a rule, smaller than populations of other species and are, therefore, more vulnerable to perturbation and extinction. Coating with oil also smothers sessile and other benthic organisms. The weight of an oil coating can cause the uprooting of marsh vegetation and macroalgae. A layer of oil significantly reduces benthic respiration and prevents photosynthesis, transpiration and translocation in plants.

The chronic sub-lethal effects of petroleum are perhaps the least obvious but are nonetheless significant. Oil becomes adsorbed by organisms and sediments and is incorporated into the lipid pool of many animals. The presence of oil in fish and shellfish causes tainting which affects market values. The West Falmouth spill caused a loss of \$118,000 of shellfish sales during the first year alone. The shellfish beds at Wild Harbor have been closed ever since with a resulting loss of thousands of dollars in revenues. Tainting can be caused by only a small fraction of the total hydrocarbons incorporated by the organism, and after the tainting effect is gone, other deleterious effects of oil remain.

Some petroleum products are carcinogenic or mutagenic and their effects are not manifest for a long period of time. Oil can also inhibit, alter or interfere with physiological processes. For example, blue mussels, Mytilus edulis, that survived the West Falmouth spill were rendered sterile the following year. Oil has been demonstrated to reduce feeding and carbon assimilation and increase respiration in Mytilus and the ribbed mussel, Modiolus demissus. In diatoms and other phytoplankton, oil causes reduced growth and photosynthesis. Oil can interfere with behavior both by internal physiological disruption and external blockage of olfactory processes.

Biological transport through ecosystems magnifies chronic effects of oil pollution. Adsorbed and absorbed hydrocarbons concentrate as they pass through food webs. The resistance of hydrocarbons to biochemical breakdown increases the potential of physiological and

behavioral disruption, carcinogenicity, and mutagenicity as they move up the food chain.

Oil causes both physical and biological changes in habitats. The mass mortality of organisms and the transport of oil-laden sediments cause drastic changes in community structures. For instance, if eel grass beds were smothered and eliminated by a spill, the affected area might lose its capacity for supporting bay scallops and other bivalves, crustaceans, and polychaete worms. In addition, the previously bound sediments, now oil-laden, are transported to adjacent areas spreading pollution.

Pollution of the marine environment, in addition to ecological costs, has high socioeconomic and aesthetic costs. An oil spill in a tourist area during the tourist season can have a devastating impact on the local economy. The 1969 Santa Barbara spill cost the regional tourist industry over \$6 million in damages and lost income. The cost of cleaning up an oil spill is also high---cleanup following the Santa Barbara spill cost almost \$5 million. The total social cost, cleanup, lost revenues, physical damage, etc., was over \$16 million.<sup>26</sup>

Recent incidents in and near Massachusetts have underscored the danger which transport of oil in tankers and barges poses for coastal areas. The December, 1976 Argo Merchant spill on the Nantucket Shoals was the biggest oil spill in North American history. The immediate impact of that spill was destruction of fish eggs and the coating of birds with oil. While some oiled birds were recovered and saved, many others died. Long-term studies are necessary to assess the ultimate impacts. The January, 1977 Buzzards Bay oil spill of several hundred thousand gallons of Number 2 fuel has had immediate, demonstrable impacts and has resulted in the emergency closure of shellfish beds from Nye's Neck north to the east side of the Cape Cod Canal. The overall impact of the spill may be very severe.

The cost of responding to and, where possible, cleaning up oil spills is enormous. Currently, public funds are utilized to underwrite the millions of dollars of expense incurred by the mobilization of clean-up crews; containment equipment; salvage operations; overflights and reconnaissance; and scientific studies of impacts. One important element in reducing both the risk of spills occurring and the public cost of responding to spills is the internalization of clean-up costs. To this end, several pieces of legislation, both state and federal, have been filed. The establishment of oil spill liability funds paid for by a tax on each barrel of oil imported into the Commonwealth will provide a clean-up capability and damages payment system that does not draw upon general tax revenues and will create incentives, in the form of lower assessments for double hulls, etc., to reduce the frequency of spills.

#### HAZARDOUS CHEMICAL AND SOLID WASTE DISPOSAL

A hazardous waste is defined as any waste or combination of wastes that poses a substantial danger, now or in the future, to human, plant, or animal life and which therefore cannot be handled or disposed of

without special precautions. A recent study indicates that 615,000 drums per year of hazardous wastes are generated in Massachusetts with metal sludges and plating solutions posing the most difficult disposal problem (approximately 55,000 drums per year).

Hazardous wastes may take the form of solids, gases, liquids, or sludges. Some wastes such as oils, pesticides, and organic sludges, can be incinerated at a high temperature. Some munitions and gases can be exploded as a means of disposal. Still other wastes can be chemically neutralized or biologically degraded. But many wastes, due to content or quantity, have no other available means of disposal other than disposal in a land site or at sea.

Both of these disposal methods pose potential problems to the coastal zone. Ocean dumping may release wastes which pose a threat to marine life. Disposal in sanitary landfills, by deep well injection, or by illegal dumping on land may pollute either surface streams or groundwater, through leaching and run-off, and pollutants may even find their way to the shoreline and the ocean environment through storm drains and sewer outfalls.

Knowledge of proper waste disposal practices is sorely lacking and disposal options are often not known.

#### PESTICIDES

The introduction of chemical pesticides into the environment has been steadily increasing since World War II. Pesticides enter the marine environment through direct application to coastal areas or transport by air, water and biota from more inland areas. Accumulation of pesticides in the marine environment, as in other environments, can cause insidious lethal and sub-lethal effects.

In coastal areas, pesticides are applied to marshes and bays to control mosquitoes, flies, weeds, and other pests. In Massachusetts, more than 20 types of pesticides are employed in cranberry production. Pesticides are also carried to the coast by rivers, washed in from sprayed lands and blown in as aerosols.

A pesticide is defined as any agent that can be used to kill pests. This definition includes insecticides, used for agricultural and public health purposes; fungicides, used agriculturally; herbicides, used in agriculture and public works; and rodenticides, used largely for public health reasons.

The progenitor of many modern pesticides is DDT (Dichlorodiphenyltrichloroethane), a chlorinated hydrocarbon (organochloride). Other organochlorides, which share many characteristics with DDT, are: aldrin, dieldrin, methoxychlor, chlordane, lindane, heptachlor, and the herbicides 2,4-D and 2,4,5-T. In addition to their toxicity, the organochlorides are dangerous because of their persistence in the environment and their tendency to be incorporated into fatty tissues which transports them through food chains.

As a substitute for organochlorides, the organophosphates were developed. These include: parathion, malathion, phosdrin, TEPP, methyl parathion, etc. The organophosphates are less persistent than the organochlorides but more acutely toxic to humans, pests and other organisms. The organophosphates are neurotoxins; they function by blocking nerve transmissions.

The carbamates complement the organophosphates in that they are effective against many pests that are resistant to organophosphates. These substances also block nerve transmission but they are frequently safer to handle. Some of the commonly encountered carbamates are: carbaryl (Sevin), carbofuran, methomyl, aldicarb (Temik) and bufencarb.

The biological effects of pesticides are many. Despite many years of research, the mechanisms of organochloride toxicity are poorly understood. It is becoming increasingly apparent, however, that pesticides affect more than target organisms.

Persistence and biological and geochemical transport are the gravest dangers of pesticides. Discontinuing application does not guarantee the end of the problem. In several case studies, quantities of DDT residues in soils and biota increased for up to seven years after DDT spraying ceased. Moreover, over time, DDT and other organochlorides concentrate in animals at higher trophic levels. DDT, aldrin, dieldrin, heptachlor, and chlordane are all carcinogenic. DDE, a degradation product of DDT, causes thinning of the eggs of predatory birds which has decimated some populations. DDT also affects temperature tolerance in salmon; kills the mosquito fish, Gambusia, a natural mosquito predator; and inhibits photosynthesis in marine phytoplankton.

The organophosphates, whose use has been promoted as an alternative to organochlorides, also have serious, adverse impacts. Organophosphates are extremely hazardous to handle and cause damage to both the central nervous system and liver in humans. Moreover, in some cases, organophosphates can kill fish and other vertebrates yet not affect the target pest. Furthermore, upon breakdown, malathion and its degradation product act synergistically with increased toxicity. Chronic exposure increases the sensitivity of some fish to malathion.

In recent years Sevin has been applied to shellfish beds along the Atlantic coast to control oyster "pests". Sevin, however, also kills juvenile clams, anthropods and fish. Sevin has also been linked to birth defects in test animals.

As the hazards of chemical pesticides are elucidated and quantified, new strategies for the control of pests must be developed. Some alternatives are available. To control mosquitoes in wetland areas, ditching is used to reduce the surface area of water and reduce the space available for mosquito eggs to develop. When properly done, the environmental impacts of ditching are significantly fewer than the use of chemical pesticides. And in the past several years insect hormones have been used to control selected pests. Compounds whose structure closely resemble mosquito hormones (hormone mimics) can be applied to wetlands and cause juvenile insects to prematurely metamorphose into adults which soon die. The major benefit of hormones is that they are, in general, species specific and do not affect vertebrates.

A recent National Academy of Sciences report on Pest Control has suggested four approaches to pest control that would prove most effective and least dangerous in the long run. The first is genetic manipulation. By breeding pest resistant plants and by releasing genetically altered individuals (sterile males), the need for chemical pesticides can be dramatically reduced. Second, the report suggests developing biological control methods that would be target specific and would, like genetic methods, reduce the need for synthetic, chemical pesticides. Among these methods are the introduction of natural predators and the introduction of bacterial and viral parasites. Third, the use of hormone mimics is in its infancy and can be further developed. Finally, integrated pest control, combining several methods depending on a host of physical and biological parameters, offers the most rational approach.

#### SEPTIC SYSTEMS/CESSPOOLS

Nutrient enrichment of coastal waters can result from the improper siting or operation of individual domestic wastewater systems. This enrichment is particularly acute where a high density of individual systems is located near bodies of water which are shallow, poorly flushed, and/or semi-enclosed.

The primary determinants of contamination from domestic waste systems are the hydrogeologic conditions of the area: (1) nature of the soil; (2) position of site within the groundwater system; and for some areas (3) amount of fracture and depth of bedrock. A further concern when near water bodies is the slope of the land towards the water, and the distance from the water to the individual system. The type of system must be considered as well.

A good soil allows the wastewater to travel through it at such a rate as to allow efficient filtration. A good soil type is well aerated to allow bacterial degradation of nutrients and offers space enough among the particles for filtration.

Distance to groundwater is important in this filtration, as a shallow groundwater level would make soil absorption and filtration of nutrients very difficult and would result in groundwater contamination. A system should be sited in an area where the water table does not fluctuate enough to cause contamination during wet periods.

The gradient of the groundwater is somewhat dependent upon the slope of the land. The steeper the land slope, the more steep the groundwater slope. Cesspools and septic systems located on sloped ground run the risk of accelerating leachates into groundwater or surface water at the bottom of the slope. In addition, leachates break to the surface, becoming contaminated surface runoff. Bedrock in some portions of coastal Massachusetts is not far below the surface of the soil. The distance between the soil surface and the bedrock must be great enough, while considering other factors as well, to allow for good filtration.

There are two individual waste treatment systems which are most commonly used in Massachusetts: cesspools and septic systems. A

cesspool is a subsurface disposal system, consisting of a large perforated tank buried underground. Heavier solid materials tend to settle to the bottom and the liquid seeps through holes in the sides into the surrounding soil.

In a septic system, the settling out of sludge and the infiltration of liquid into the soil takes place in different areas. Wastewater flows first into a watertight septic tank where anaerobic decomposition takes place. The liquid is directed through a pipe to a leaching field, usually an area of prepared gravel trenches for good adsorption and filtration of material.<sup>28</sup>

These two waste treatment systems are dependent upon efficient soil absorption for removal of nutrients and other compounds. The removal ability of the soil is dependent upon the forms of compounds in the effluent, as well as on characteristics of the soil itself.

Nitrogen is found in four forms in domestic wastewater: organic, ammonia, nitrate, and nitrite. Nitrogen in the effluent leaving a septic system is usually organic and ammonia. Ammonia is adsorbed by soil particles in increasing amounts as particle size decreases.

Phosphorous is generally found in septic systems as phosphate. Most soils are capable of fixing phosphorous, through a combination of adsorption, change in the crystalline structure of the molecule, and precipitation. Chlorides are also found in domestic wastewater. Chlorides and nitrate migrate with groundwater over extended distances and undergo only a moderate amount of vertical dispersion. As a consequence, these two compounds may be found close to the soil surface in the top six feet of soil, making nitrates readily available for plant uptake.

Groundwater contamination is dangerous since many coastal towns depend upon wells for supplying household water. Groundwater contamination and/or poorly operating waste systems in coastal areas can result in nutrient enrichment of coastal waters. Initially, this enrichment may have beneficial effects, but in the long term, sewage enrichment can be particularly damaging to shallow, poorly flushed water systems (see Sewage Treatment Facilities).<sup>29</sup>

#### RECREATIONAL BOATING

Recreational boating activity in the estuaries, bays, and offshore waters of the Massachusetts coastal zone is on the increase (see Recreation section).

Boating activity and related facility development may impact the marine environment in a number of ways. Physical impacts may include erosion of shorelines by boat generated wakes, increased turbidity due to resuspension of bottom sediments by prop wash, or the destruction or alteration of wetlands and other important coastal habitats through marine or launching ramp development and dredging of access channels.

The incidence of shoreline erosion will depend on the narrowness of waterways, the stability of shoreline soils and sediments, and the

speed, magnitude, and frequency of recreational craft generating waves that will strike the shoreline. Other factors obviously affect shoreline erosion as well, including natural storms and waves and surface runoff. Therefore, it is difficult to assess exactly to what extent boating may have caused erosion of Massachusetts shorelines in the past. However, further expansion of boating activities in the narrow estuaries, rivers, and creeks where shoreline conditions render them susceptible to erosion should be viewed with caution.

Since most Massachusetts harbors and boating areas are reasonably deep, it is unlikely that recreational boat prop wash could raise turbidity levels to harmful levels.<sup>30</sup> Encroachment of boating facilities into wetlands and other significant resource areas, however, may become more prevalent as waterfront property becomes more scarce. Facility development in these areas--marshes, tidal flats--may constrict water circulation, destroy productive habitat, and pollute local waters through spillage of fuels, acceleration of surface run-off, and discharge of human wastes.

Other adverse biological impacts related to boating activity may result from the overboard discharge of human wastes, or the emission of engine exhausts and unburned fuels through crankcase drainage. Federal regulations promulgated by EPA require the use of marine sanitation devices which treat wastes on board and then discharge it overboard.<sup>31</sup> The degree to which discharges of human wastes will adversely impact water quality will be largely dependent on the intensity of boating activity, the size of the coastal water body, depth, existing water quality, the presence of other contributors to pollution, and the flushing capacity of the water body. In narrow, constricted estuaries or embayments where water quality may already be approaching threshold levels, intense boating activity on peak weekends may generate enough human wastes to produce adverse conditions such as nutrient enrichment or the introduction of hazardous bacteria or viruses. The operation of recreational boat engines discharges gases, complexed particulate lead compounds, hydrocarbons and organoleads present in unburned fuel, and rearranged hydrocarbons produced in the combustion process. Recent Environmental Protection Agency and Boating Industry Association studies show that the average outboard engine, when in use, contributes about 2.5% of its fuel to the water.<sup>32</sup> As explained in the section on oil pollution and heavy metals, some of these substances evaporate, some may adhere to bottom sediments, and others may build up in receiving waters (particularly when there is limited disturbance of bottom sediments to which these components can adhere). As with waste discharge, the severity of adverse effects will be dependent on water body size, existing water quality, other polluters, depth, and flushing characteristics.

It is unlikely recreational boating activity will result in substantial adverse biological or physical impacts when compared to other activities such as municipal sewage discharge or dredged material disposal. However, in situations where intense boating activity coincides with high sensitivity of marine resources to boating related impacts, some ecological damage may result.

Vol. I p. 71 paragraph 4, line 4 add

"and 5) fish spawning occurs."

Vol. I p. 71 paragraph 4 line 4 add:

"and 5)certain fish species spawning if the dredging takes place during spawning season."

~~Two dredging methods used~~ are hydraulic and mechanical. Hydraulic dredging uses a centrifugal pump which picks up a slurry of bottom material and water, and transports it through a pipeline to either the disposal site or a vessel to carry it to a disposal site. This method is used primarily for onshore or near-shore disposal and is employed when the spoil is used for beach nourishment or dune creation. Hydraulic dredging and offshore disposal have not been used extensively in Massachusetts.

Mechanical dredging is the most prevalent dredge method in Massachusetts because many of the dredging projects in this state involve removal of bottom material which is unsuitable for beach nourishment and/or dune creation and must be ocean dumped. Mechanical dredging is similar to earth removal, using large bucket scoops or shovels that lift the spoil in a consolidated form and place it in a barge or scow. Material is then transported to offshore disposal sites where it is deposited by opening doors on the bottom of the scow.

Adverse effects of dredging activity are more severe in areas where: (1) water circulation is limited; (2) the bottom is rich in organic matter; (3) the sediments are polluted with heavy metals; and (4) salt marshes are nearby. Dredging activity in biologically productive areas, such as salt marshes and related tidal flat systems, can cause significant reductions in productivity. For example, in estuarine environments, dredging can cause changes that exceed the tolerance levels of the resident organisms.<sup>33</sup>

Mechanical dredging generates more suspended material at the dredge site than does standard hydraulic dredging, and impacts an area larger than the immediate site. As the shovel/scoop is raised to the surface, spillage may occur. This suspended sediment can have adverse impacts. It makes the water turbid and can cause the death of organisms by blocking the light necessary for photosynthesis and by clogging the gills and siphons of fish, molluscs, and other marine fauna.

Dredging removes organisms that live both on and within the sediments. This reduction in the number of organisms may lead to a decrease in the diversity of species with subsequent impact on dependent marine resources.<sup>34</sup> Dredging also removes benthic vegetation such as eelgrass which is used by the bay scallop for attachment and growth, by young eels and sculpin for protection from predators, and by brant as a major food source. Benthic vegetation also is important because it is a major cycle of nutrients through marine ecosystems and because it is a major source of detritus for deposit feeders.



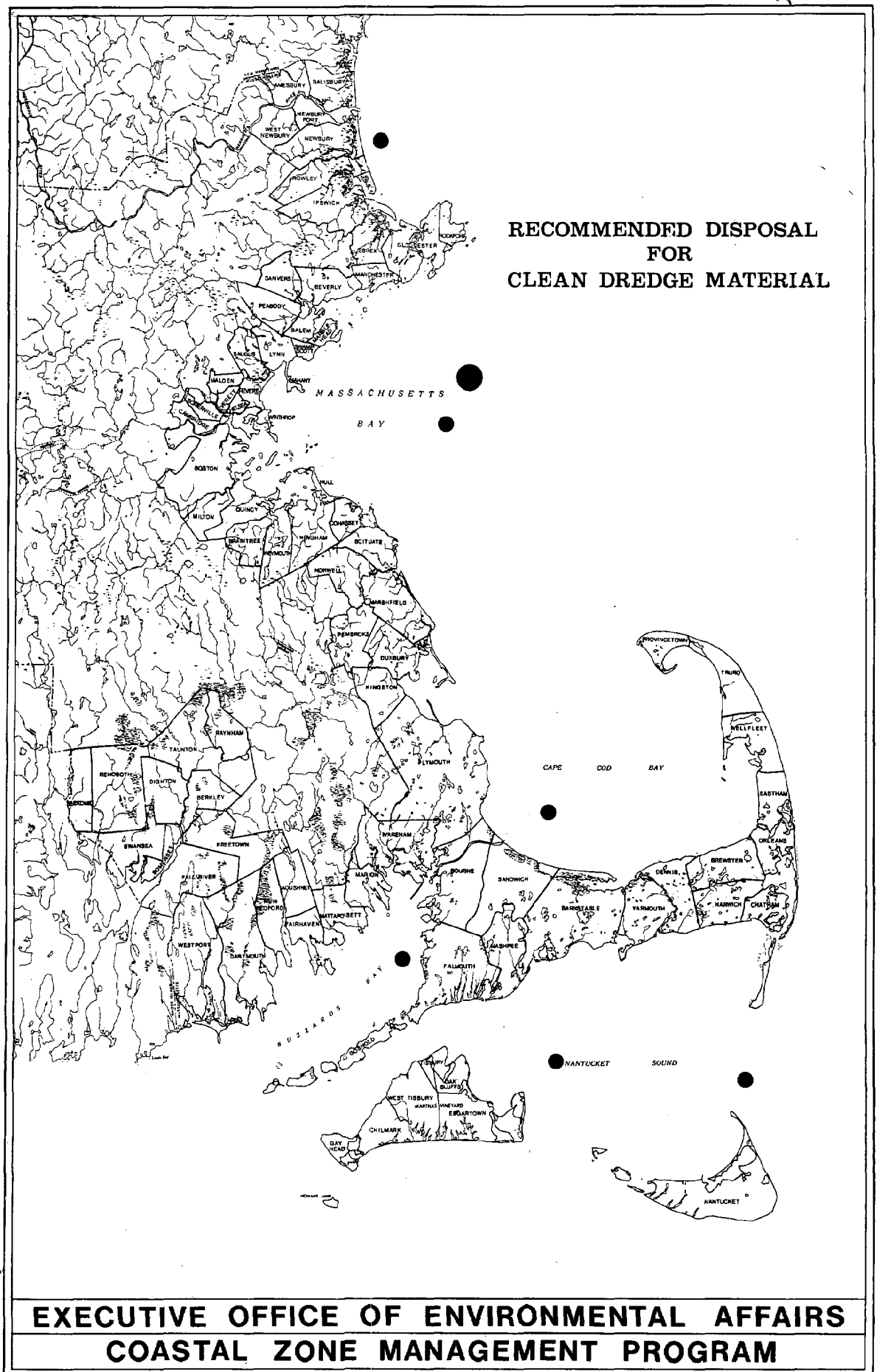
In intertidal areas it may take at least eight years after dredging operations have occurred for the reestablishment of the original fauna.<sup>35,36</sup> This reduction in an area's productivity will have serious effects upon the productivity of the whole water body, since many organisms depend upon the nutrient production and export of the salt marshes and the richness and diversity of tidal flat populations for feeding, spawning, and nursery activities.

The selection of a disposal site for dredge material designated as uncontaminated by the Division of Water Pollution Control is usually based upon the costs of available disposal methods and transportation. In order for most projects to be viable, a nearby land site of a relatively close ocean disposal site is required. Ordinarily, a land site is sought first. If the material consists primarily of clean sand or gravel, it is usually ideal for beach replenishment. Mixed sand and gravel or crushed bedrock makes excellent fill. These materials usually find ready land sites for disposal. Unfortunately, little use has been found for the fine grained material (silt and clay) dredged in maintenance projects. Since filling coastal wetlands has been virtually eliminated because their value as highly productive resources has been recognized, this dredge material has often been disposed of at sea.

There are seven open water disposal areas along the Massachusetts coast approved for the dumping of clean dredge spoil. One of them, the Foul Area, is also for disposal of polluted spoils. The sites were chosen for their accessibility and proximity to coastal areas rather than their stability. Thus, dredge material is often disposed of at sites where erosion and transport of dredge spoil occurs. In many cases, coastal towns have complained that the distance to designated ocean disposal sites makes dredging projects economically unfeasible. Some areas must transport dredge material more than 15 nautical miles to the nearest approved disposal site.<sup>37</sup>

Massachusetts law requires that the Commissioner of the Department of Environmental Quality Engineering make a determination that disposal of dredge spoil will not adversely affect the environment before an ocean disposal site may be used (Massachusetts General Laws Chapter 347, Acts of 1976). The state's only open water disposal site for contaminated dredge disposal is located 22 nautical miles each of the port of Boston in Massachusetts, serving primarily the northern portion of the state. Due to the high costs of transporting dredge material from southern coastal communities, a second ocean disposal site in Rhode Island Sound is presently under study.

The movement of pollutants once dumped at ocean disposal sites depends upon (1) the nature and consistency of the dumped material, (2) the dumping method, and (3) the transport processes (wave and current erosion) affecting the dump site. Most contaminated dredge spoils are primarily fine-grained silt and clay. When dumped from a scow, some of the material falls directly to the bottom, some is carried laterally from the site by currents, and a portion is left near the surface to disperse. To prevent excessive mixing it is important that the material be dumped from a stationary position. If dumping occurs



when the scow is approaching or leaving the disposal site, dispersal will be significantly increased.

Disposal of the spoil has both acute and chronic biological effects. Many benthic and free-swimming organisms are buried or suffocated by dumped spoil. Moreover, dredge spoil disposal causes significant perturbation in benthic habitats. Although recolonization of dump sites occurs to some extent, the community structure is permanently altered since the most opportunistic species recolonize first.

Much of the material dredged from the coastal harbors of Massachusetts contains concentrations of heavy metals, pesticides, and organic and petroleum wastes. A potentially greater problem than burial and habitat destruction is the absorption, accumulation and recycling of these heavy metals, pesticides and other contaminants by marine organisms. Some of these contaminants of dredge spoil are carcinogenic and/or mutagenic. Cycling of these contaminants depends on such factors as clay, organic and bacterial content, pH, and local currents.

The threat of contaminant release from open water disposal can be mitigated by an overlay of clean sediments. At present, however, designated spoil sites in Massachusetts are high energy sites rather than depositional in nature. A sufficient quantity of clean sediments to adequately cover the polluted material would be required; however, such a quantity is not always readily available.

To phase out the use of ocean disposal for contaminated dredge materials, viable alternative disposal methods must be implemented in Massachusetts. One of the most common land disposal methods used is retention of spoils in a diked confinement area. If the spoil is compacted by mechanical dewatering and covered with humus, it could be used as landfill. However, shortage of land close to dredging operations will limit further dike construction. Other problems with confinement areas include odor, mosquitoes, groundwater contamination, changes in harbor currents, turbidity, noise during disposal activities, buildup of hydrogen sulfide, the long settlement time before reuse, and local opposition.

Use of spoil for landfill requires pumping or other transport inland which may be costly. Unless pre-treated with expensive neutralizing and stabilizing chemicals, this disposal may contaminate groundwater and generate odor. Combination with flyash waste from nearby power plants, however, may help solve two disposal problems while stabilizing spoil to the point where it can be built upon.

Inland pipeline transport of dredge spoils to reclaim strip mines, borrow pits, or other land is technically feasible up to 100 miles. However, substantial acreage may be necessary to make such a disposal option economically viable. Potential groundwater contamination is another limiting factor.

Artificial habitat creation by the construction of spoil islands and new marsh areas is one of the most promising alternatives, offering

the ability to utilize large volumes of spoil with poor structural characteristics. One problem requiring further study is the potential uptake and cycling by marsh grasses of contaminants from polluted sediments.

Small volumes of dredge spoil might be usable as raw materials for bricks and building materials, though this alternative is not yet economically feasible.

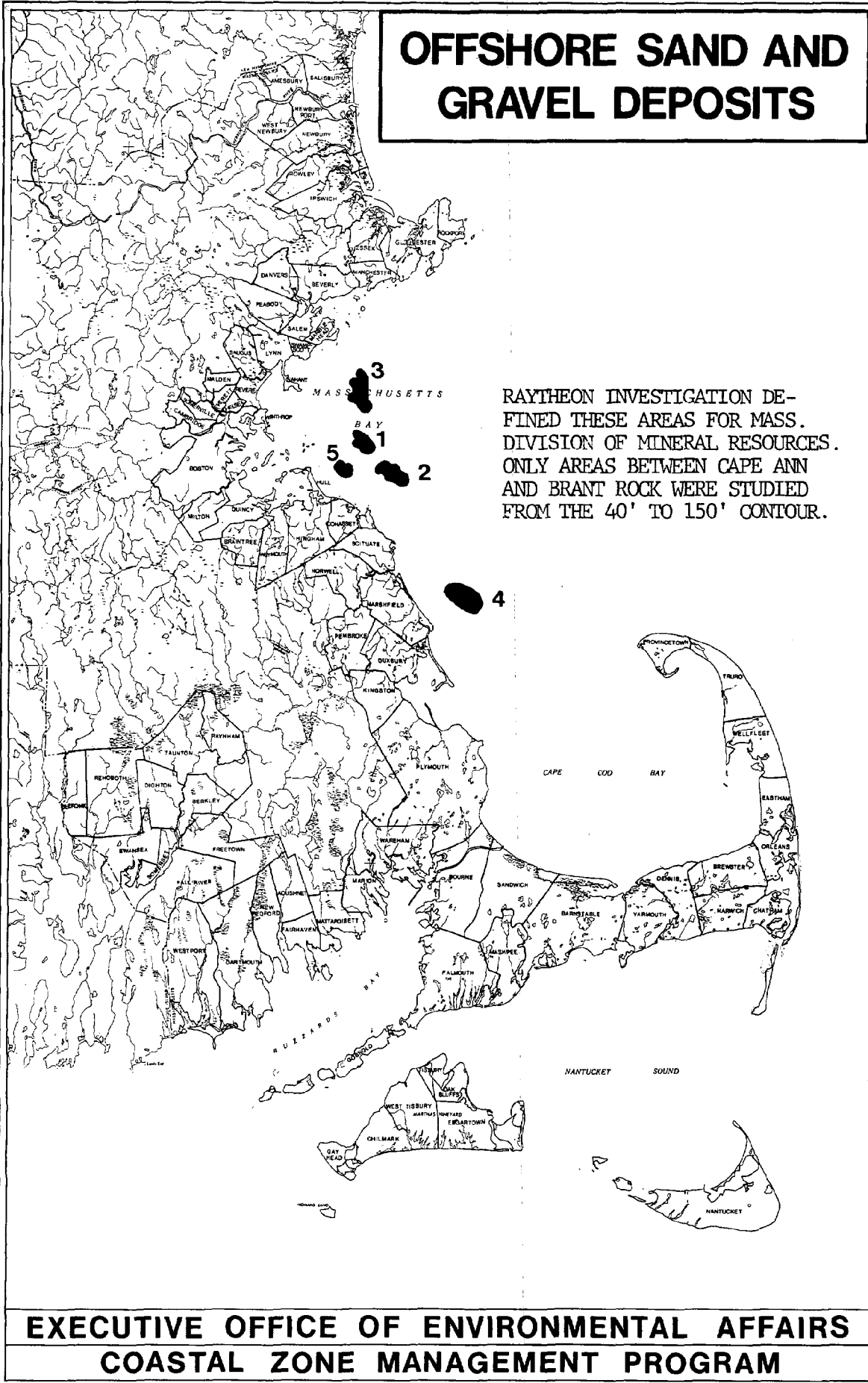
#### OFFSHORE SAND AND GRAVEL MINING

There is currently a moratorium on all offshore mining in waters of the Commonwealth of Massachusetts. This was established as an interim measure until the N.O.M.E.S. (New England Offshore Mining Environmental Study) could be completed. N.O.M.E.S. was a cooperative research effort between federal agencies and the Commonwealth of Massachusetts. Its purpose was to "evaluate the direct and indirect ecological effects of offshore sand and gravel mining... (and) to provide a scientific basis for the establishment of realistic environmental safeguards over potential future offshore mining operations."<sup>38</sup> Unfortunately, the N.O.M.E.S. project was not completed and the environmental consequences of offshore mining have yet to be determined. In addition, five ocean sanctuaries have been established by the Commonwealth that prohibit the removal of any sand, gravel, or other minerals except in certain areas for public shore protection or public beach restoration.

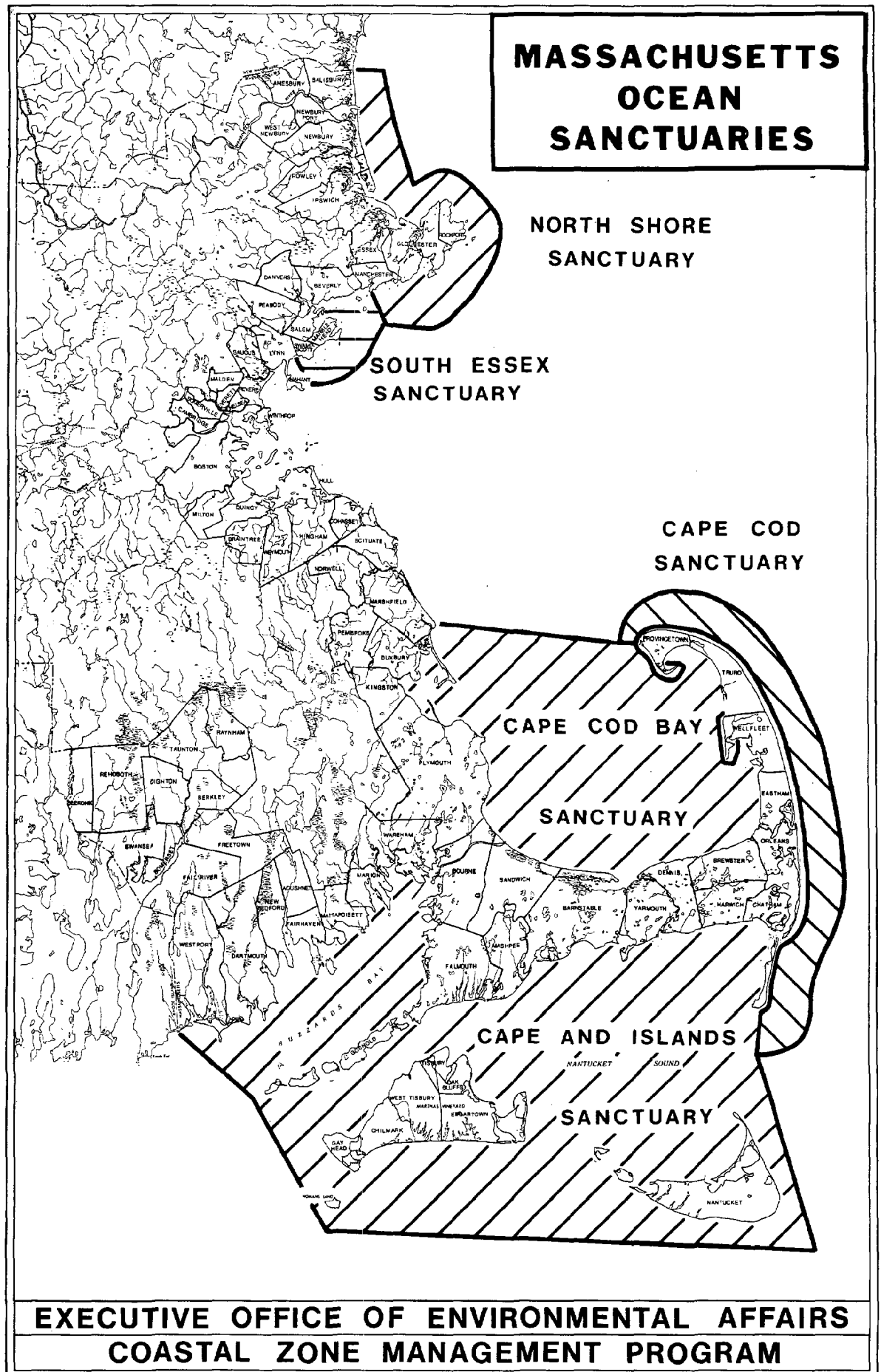
As a result, all sand and gravel aggregates in the Commonwealth of Massachusetts are derived from land-based deposits. The supply of deposits is decreasing rapidly due to an annual demand increase of more than 5% per year. In addition, land with potential mineable deposits is being rapidly consumed for residential and commercial use, especially near urban centers where the demand for aggregate is highest. The dwindling supply versus the increase in demand has caused the Boston prices for concrete sand to increase from \$2.00 per ton at the plant in 1972 to \$3.80 in 1976, and for gravel to increase from \$3.00 per ton in 1972 to \$4.50 in 1976. To these base prices transportation costs must be added.

Faced with these rising prices, the pressure for off-shore mining has caused the Commonwealth to study the availability of offshore sand and gravel deposits. Potential sand and gravel resources of Massachusetts waters between Cape Ann and Brant Rock (generally between the 40 and 150 foot contours) were investigated by Raytheon Company, Oceanographic and Environmental Services Division for the now unfunded Division of Mineral Resources. The survey consisted of acoustical reconnaissance techniques (seismic, side scan sonar and precision echo sounding), bottom coring and sampling (Vibrocore and Shipek grab sampling) and bottom photography. The result of this survey was the identification of 15 areas with over 110 million cubic yards of potential economic sand and gravel deposits. Five of these areas were identified as containing appreciable quantities of aggregate (see accompanying map). However, Raytheon pointed out that additional data is necessary to definitely determine the economic value of these deposits.<sup>39</sup>

# OFFSHORE SAND AND GRAVEL DEPOSITS



EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
COASTAL ZONE MANAGEMENT PROGRAM



Mining of offshore sand and gravel can be performed by several different methods. Hydraulic dredging is the most efficient method currently available. Before the sand and gravel aggregate reaches the barge or hopper, water and silt and clay size material are removed from the slurry and discharged into the water column. The adverse effects of the sand and gravel mining are similar to those of dredging. (See Dredging.)

Mining in areas with polluted sediments can cause a release of heavy metals, P.C.B.'s, hydrocarbons, pesticides, etc., to the water column. Most offshore areas in Massachusetts do not have polluted sediments; however, near harbors and areas where contaminated dredge spoil or other hazardous substances have been dumped, polluted sediments are present. These areas should be avoided in offshore sand and gravel recovery.

Beaches depend on sand supply from both littoral currents which move sand parallel to the beach and the onshore movement of sand that occurs during gentle summer wave conditions. During the winter, storm wave conditions cause net sand transport offshore. Generally the movement of sand onshore equals the movement offshore; however, if sand is removed from offshore areas which are part of the natural beach replenishment system, then there will be a net loss of sand to the beach. Sand movement responsible for natural beach replenishment extends to the depth of 80 feet.<sup>40</sup> Detailed studies should be performed to ensure that sand and gravel is not removed from areas that are either a source of beach materials or serve to decrease the energy of waves impacting the coastline.

Several other potential conflicts may arise due to offshore sand and gravel mining such as interference with fishing activity and adverse effects to spawning and nursery areas. Mitigating measures will be recommended to minimize any problems such as these.

Onshore facilities associated with offshore mining may consist of off-loading terminals, processing plants and storage areas. Potential environmental problems associated with these facilities are similar to those of land based sand and gravel operations such as: noise, air pollution, and any effects on the local flora and fauna. In addition, offshore sand and gravel aggregate will contain salt which can cause ground and surface water contamination. Thus, siting of these facilities must be done with the utmost of care.

## OBJECTIVES

The preceding discussion suggests that the management of the marine environment should encompass the following objectives:

1. To protect and enhance the productivity and values of the marine environment affecting the Commonwealth of Massachusetts.
2. To minimize the adverse impact of man's activities upon the marine environment.
3. To guarantee continued production and harvest of renewable marine protein sources.
4. To insure man's continuing use and enjoyment of the Massachusetts coast.

## COASTAL ZONE MANAGEMENT POLICIES AND PROGRAM RECOMMENDATIONS

Policy (1) Conserve ecologically significant resource areas (salt marshes, shellfish beds, dunes, beaches, barrier beaches, and salt ponds) for their contributions to marine productivity and value as natural habitats.

Salt marshes, shellfish beds, dunes, beaches, barrier beaches, and salt ponds provide habitat for marine associated organisms upon which higher level species depend for food, and provide nesting and feeding areas for migratory waterfowl and shorebirds. Salt marshes produce organic matter which is an important source of nutrition for marine life in coastal waters. These resource areas are defined as follows and mapped in the Regional Chapter:

salt marsh: high marshes are low-lying coastal wetlands characterized by the presence of Spartina patens. These marshes are flooded by seasonal high tides. Low saltwater marshes are areas vegetated by Spartina alterniflora. This land is submerged by normal tides.

shellfish bed: areas of bottom which, in combination with other environmental factors, favor the establishment and production of harvestable shellfish: blue mussel, oyster, quahog and soft shell clams, bay scallops, sea clam, and ocean quahog. Bottom areas with associated Zostera marina serve in places as bay scallop nurseries.

beach: the gently sloping shore of a body of water consisting of unconsolidated material subject to wave, tidal, and coastal storm action. Beaches extend from the mean low water line to the duneline, beachgrass line or to the seaward edge of existing man-made structures.



dune: any low hill, mound, or ridge of sand deposited by wind action or storm overwash or by artificial means for shoreline protection. Dunes extend from the beach landward to the end of beachgrass vegetation or the end of the topographic expression.

barrier beach: a narrow low-lying strip of land composed of unconsolidated material extending roughly parallel to the general coast and either completely or partially separated from the mainland by a narrow body of fresh, brackish or saline water or marsh system. Barrier beaches are dynamic landforms that are presently migrating landward in response to rising sea level. They serve as a buffer to protect landward public and private property and natural areas from the force of storms and coastal flooding. In addition, barrier beaches provide valuable natural habitats and function as natural dynamic systems that change in response to coastal processes (erosion and accretion, storm overwash, and dune development).

salt pond: a shallow enclosed or semi-enclosed bay of saline water formed as the result of glaciation or barrier beach formation at the mouth of a shallow bay. Salt ponds are subject to fresh water influence from small streams emptying into the upper reaches of the pond or springs along the periphery and/or in the pond itself. Salt marsh vegetation usually forms a fringe around the pond.

These ecologically significant resource areas comprise at the most 70,000 acres, or approximately 12 percent of the coastal zone. Currently about 40,000 of these acres are protected by the Wetlands Protection Act which vests authority to condition construction in such areas to local conservation commissions, under state guidance. The other 30,000 acres are under the Wetlands Restriction Act which authorizes the placement of restrictive orders on property deeds proscribing permitted and prohibited uses in Wetland areas.

#### Permitted and Prohibited Uses

In the areas subject to the Wetlands Protection Act, no uses are prohibited a priori. Rather any activities that would remove, fill, dredge, or alter these areas will continue to be conditioned or denied on a case-by-case basis to protect the interests specified in the Wetlands Protection Act:

- protection of land containing shellfish;
- protection of fisheries;
- prevention of pollution;
- storm damage prevention;
- flood control;
- ground water supply;
- public or private water supply

Protection of these seven interests complies with the intent of the federal Coastal Zone Management Act regarding the management of geographic areas of particular concern.

The conservation of these resource areas can be undermined by activities taking place in adjacent or contiguous uplands. These

impacts include the alteration of fresh water inflow which may affect salinity regimes and shellfish and fishery habitats, the leaching of pollutants from septic tanks or introduction of contaminants from storm water run-off on paved surfaces impacting the harvestability of shellfish, or increased sedimentation which may impair salt marsh growth, shellfish health, or fish spawning grounds. Thus, conservation commissions shall continue to review proposed developments within a buffer of up to 100 feet beyond the 100-year floodplain or the landward edge of wetlands defined under the Wetlands Protection Act and appropriately condition or deny such developments so as to minimize damage to land, to protect public, private, and groundwater supply, and to ensure storm damage prevention and flood control.

In response to the state legislature's desire to clarify the standards and procedures governing the administration of the Wetlands Protection Act, a program review board has been established to review the Act's regulations. CZM is encouraging the board to view salt marshes, shellfish beds, dunes, beaches, barrier beaches, and salt ponds as the most critical of wetland types, therefore meriting the highest degree of protection. Revised regulations for the Wetlands Protection Act are expected to be prepared in the fall of 1977 and promulgated before or shortly after federal approval of the Massachusetts coastal zone management program.

In areas restricted under the Wetlands Restriction Act, the following set of permitted and prohibited uses shall apply. Local by-laws may provide for more stringent requirements and thus would supercede this policy.

- a. The construction and maintenance of catwalks, wharves, piers, docks, boathouses, boat shelters, shellfish shanties, fish houses, fences, wildlife management shelters, foot bridges, observations decks and shelters; provided that these structures are constructed on pilings to permit the reasonably unobstructed flow of the tide and preserve and natural contour of the area.
- b. The cultivation and harvesting of shellfish and worms for bait, and the excavation and construction of areas for the cultivation and harvesting of shellfish and other marine foods. Salt marsh haying, dune or marsh grass planting, and the harvesting of marine algae and Irish moss.
- c. Outdoor recreation activities including but not limited to hiking, boating, trapping, hunting, fishing, horseback riding, skeet and trap shooting, and shooting preserves; provided that any structures related thereto do not destroy the beneficial character of the restricted area.
- d. The installation of floats, provided they are located below mean low water, and receive the approval of the local Shellfish Department.

- e. The construction and maintenance of a driveway or roadway of minimum legal and practical width where reasonable alternative means of access from a public way to unrestricted land of the same owner is unavailable. Such driveway or roadway shall be constructed in a manner which permits the reasonably unobstructed flow of the tide.
- f. The enlargement to minimum legal and practical width and the maintenance of existing roadways.
- g. The installation and maintenance of underground and overhead utilities limited to electrical, communication, sewer, portable water and gas lines provided the surface vegetation is restored substantially to its original condition.
- h. Excavation for wildlife management impoundments provided that no fill or other material shall be placed upon the area except as may be necessary to construct the retention structure and provide access thereto, and to provide bank stabilization.
- i. Maintenance dredging of existing channels and marine facilities provided that such maintenance dredging shall not increase the scope of the initial dredge project. Expansion dredging of existing channels or marine facilities with approval of the local Shellfish Department, the local Conservation Commission, the Division of Marine Fisheries, the Division of Waterways and the U.S. Army Corps of Engineers. Said expansion shall be accomplished, wherever practicable and reasonable, without dredging in salt marsh areas or land containing shellfish as identified by the Division of Marine Fisheries.
- j. The construction and maintenance of boat launching ramps and beaches, including beach nourishment, except on salt marsh areas and land containing shellfish as identified by the Division of Marine Fisheries; bank and dune stabilization and shoreline protection works as long as such structures will have no adverse effects on adjacent properties or downcoast areas.
- k. Dredging and/or construction for a boat channel or a size limited to single family use with the approval of the local Shellfish Department, local Conservation Commission, the Division of Marine Fisheries, the Division of Waterways, and the U.S. Army Corps of Engineers. Said dredging and/or construction shall be accomplished wherever practicable and reasonable, without dredging in salt marsh areas or land containing shellfish as identified by the Division of Marine Fisheries.

1. The use or improvement of land or water for agricultural purposes provided, however, that any subsequent non-agricultural uses of land which was altered for agricultural purposes may be regulated, restricted or prohibited in accordance with any conditions stated herein.
- m. The dredging, expansion, and maintenance of ship channels serving designated port areas (see Policy [18])

All activities, except those needed to accomplish the above permitted uses, shall be prohibited, including:

- a. No person shall fill, place or dump on said coastal wetlands any soil, loam, peat, sand, gravel, rock or other mineral substance, refuse, trash, rubbish, debris or dredged material.
- b. No person shall drain or excavate or dredge said coastal wetlands or remove therefrom loam, peat, sand, soil, or other mineral substance.
- c. No person shall discharge hazardous substances, effluent from a sewage treatment facility, and thermal effluent from a power plant or other industrial source.
- d. No person shall perform any act or use said coastal wetland in a manner which would destroy the natural vegetation of the coastal wetland, substantially alter the existing patterns of tidal flow, or otherwise alter or permit the alteration of the natural and beneficial character of the coastal wetland.

#### IMPLEMENTATION

Alteration of salt marshes, dunes, beaches, barrier beaches, shellfish beds, and salt ponds and construction or discharge to water bodies are subject to state and federal permit and licensing processes. The state Wetlands Protection Act provides for conditioning activities conducted in the area. Also, the state through the Coastal and Inlands Wetlands Restrictions Act is authorized to place restrictive orders on property owners' deeds proscribing certain permitted and prohibited uses in wetlands. restrictions on discharges and dredging and dredged material disposal will be implemented through authorities administered by the Division of Water Pollution Control and the Department of Environmental Quality Engineering.

In addition, Policy (1) will be carried out by providing CZM funding to the Department of Environmental Management to apply the Coastal Wetlands Restriction Program to as yet unrestricted salt marshes, dunes, beaches, barrier beaches, shellfish beds, and salt ponds. First priority will be given to restricting wetland areas in Areas for Preservation or Restoration (see Policies (2) and (8)). The program will not be applied to designated port areas (see Policy (17)).

The CZM program will provide technical assistance, if requested, to local communities through their conservation commissions, in advising them of types of structural design which will be most consistent with CZM policy goals. Other types of technical assistance will be available for drafting floodplain and wetlands zoning by-laws or ordinances to condition uses consistently with this policy (see also Policy (8)).

Applications for federal licenses or permits will be deemed consistent with the CZM program if, in a wetland restricted by the Coastal Wetlands Restriction Program, they abide by the schedule of permitted and prohibited uses, or if, in an unrestricted wetland, they abide by the order of conditions imposed under the Wetlands Protection Act. In addition, implementation by federal agencies of President Carter's May 24, 1977 Executive Orders on Floodplain Management and Protection of Wetlands will reinforce the implementation of Policy (1).

The principal license or permit authorities relied upon to carry out this policy are summarized below.

--Coastal Wetlands Restriction Program (MGLA Ch. 130, s. 105) authorizes the Commissioner of the Department of Environmental Management, after a public hearing, to restrict coastal wetland areas to protect public safety, health and welfare, public and private property, and wildlife and marine fisheries. All beaches, dunes, salt marshes, shellfish beds, and salt ponds in coastal Massachusetts shall be restricted under the Coastal Wetlands Restriction Program, except for those in designated port areas and those under MDC control. The geographical extent of areas to be restricted shall be delineated on the basis of the definitions given in A above. Unaltered barrier beaches shall be restricted in total. Restriction of altered barrier beaches will include only those portions which still exhibit characteristics of naturally functioning barrier beaches as defined in A above and shall include, at a minimum, beaches and dunes. Mosquito control and other projects authorized by the State Reclamation Board are, by law, exempted from the provisions of the Coastal Wetlands Restriction Program.

--Wetlands Protection Program (MGLA Ch. 131, s. 40) gives local Conservation Commissions the authority to review proposals for projects in wetlands. The purview of the Act extends to 100 feet beyond either the 100-year floodplain or the landward edge of the wetland, whichever distance is the greatest. All dredging, filling or other alteration in this area is unlawful without filing a Notice of Intent, both with the local Conservation Commission and the Commissioner of the Department of Environmental Quality Engineering. CZM is working with DEQE to revise the program's regulations to provide clearer guidance as to the permissibility of uses in or adjacent to salt marshes, salt ponds, dunes, beaches, barrier beaches, and shellfish beds. As this program is of key concern to CZM, assistance will be provided to Conservation Commissions to insure that they have the technical capacity to protect these areas and implement CZM policy through their initial reviews.

In allowing boat channels for single family use under Policy (1), Conservation Commissions will be encouraged to restrict permitted dredging to the minimum practical amount by extending the length of the dock on pilings into deeper water. Single family use shall be defined as that required for a principal power or sail boat and as many as two additional smaller boats. In cases where near or abutting property owners wish to establish common or larger docking space, Conservation Commissions will be encouraged to permit such uses under the following conditions:

1. the total volume of dredge is not increased by such consolidation;
2. the right of access, running with the land, is incorporated within the deeds of the participating property owners;
3. the proposal does not contravene other town by-laws, or Division of Waterways criteria for permit issuance; and
4. all participating landowners sign an agreement with the Conservation Commission, running with the land, that they, either collectively or individually, will not seek to construct an additional wharf or pier in the future.

--Waterways Program (MGLA Ch. 91, s.1-59) within DEQE, has authority over tidelands, harbors, and certain rivers below the high water mark. Among the activities covered by Chapter 91 are filling, construction of any structure, dredging, or removal of sand and vegetation. Approvals are in the form of a license, not permits, because the activity is taking place on public land and thus DEQE is acting as a trustee and not an ordinary regulatory agency. Under the law, all licenses expire after five years. The agency has mainly been concerned with activities which result in physical alterations of waterways or obstructions to navigation. However, the authority is broader and requires a balancing of public benefits for projects below the low water line. Between high and low water lines no license may be granted if there is an interference with the reserved public rights for fishing and fowling; this includes both the public right to traverse the area below the high water mark in order to fish or fowl and the assurance that an activity will not interfere with the wildlife resource habitat which could effectively limit the availability of fish or fowl. The Waterways Program also carries out

projects with state funds such as dredging or shoreline protection works. CZM has already been working with this program to develop a ranking system for such requested projects. This system will also include consideration of areas and activities covered by the Marine Environment section.

--Ocean Sanctuaries (MGLA Ch. 132A, s. 13-17) have been created to protect all state waters except those from Lynn through Marshfield and those in Mt. Hope Bay. While the terms of the five sanctuaries vary, in general such activities as removal of any sand, gravel or minerals, any dumping, or any waste discharge are prohibited, and shore protection, water navigation aids or fish harvesting are permitted. CZM is working with the Department of Environmental Management to prepare regulations and an interpretation of these acts, and with the Department of Environmental Quality Engineering to ensure that Ocean Sanctuaries provisions are enforced through DEQE's permit procedures.

--Division of Marine Fisheries is responsible under Chapter 130 and related laws for management and development of marine fisheries. Their jurisdiction covers all waters from the rise and fall of the tide to the seaward boundary of the Commonwealth, including specifically the control of harvesting of shellfish and fish, and the discharge of any substance which will affect the marine resources of the Commonwealth. In order to ensure that marine resource concerns are incorporated into the review process on any coastal activity requiring a state permit, a joint Memorandum of Understanding between the Commissioners of DEQE and the Department of Fisheries, Wildlife, and Recreational Vehicles shall be drafted.

--Division of Marine and Recreational Vehicles (MGLA Ch. 90B) licenses such recreational vehicles as motorboats and dune buggies. Section 26 forbids operation of any snow or recreational vehicle in areas which could endanger property, planted areas or wildlife. CZM will work with this Division to develop measures to ensure that recreational vehicular use on ecologically significant resource areas conforms to the intent of Policy (1).

--Division of Water Pollution Control (MGLA Ch. 21) issues point source discharge jointly with EPA under the National Pollution Discharge Elimination System (NPDES). DWPC also licenses the disposal of chemical, explosive, reactive and toxic substances which may constitute a danger to public health, safety, or welfare or to the environment. Through agreement with CZM, DWPC will not issue certificates or licenses for activities prohibited in SRA's as specified above. Issuance of NPDES permits by EPA must also be consistent with the CZM program (See Policy [3] for further recommendations concerning DWPC's role in protecting the marine environment).

--Permits for Filling in Navigable Waters - Under Section 404 of the Federal Water Pollution Control Act of 1972 (U.S.C. 1344), the Corps of Engineers authorizes filling of navigable waters. Since the scope of jurisdiction over navigable waters is very broad, the Corps is implementing this program in three phases. It is, at present, exercising jurisdiction over coastal waters and coastal wetlands and freshwater wetlands contiguous or adjacent to coastal or inland

"As part of the Corps permit review process for Section 404 and Section 10 the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, state Marine Fisheries and state Fisheries and Wildlife agencies are asked to submit comments on the potential effects of the project on fisheries and wildlife resources and habitat."

of the United States - Are granted by the Corps of Engineers under Section 10 of the Rivers and Harbors Act of 1899. This permit covers such projects as sinking pilings, attaching moorings, placing outfall pipes, or digging tunnels. While the scope of jurisdiction under this permit is not as broad as for Section 404 permits, it does cover waters susceptible for use in interstate commerce up to their high water line. This includes all marine waters plus many inland waters. CZM's consistency certificate for projects proposed in Significant Resource Areas or Areas for Preservation or Restoration will be issued in the same way as for Section 404 permits.

--Energy Facilities Siting Council (MGLA Ch. 164) - The Council has jurisdiction over the siting of electric generation, gas and oil facilities and ancillary structures. The Council has override powers over permits issued by state and local agencies. As detailed in the Energy section, CZM and EFSC will continue their close working relationship to insure a uniform energy and environmental policy for the Commonwealth.

--A-95, MEPA and NEPA Reviews - When any expenditure of state or federal funds or permit issued by a federal or state agency not within Environmental Affairs is involved in Significant Resource Areas for Preservation or Restoration, CZM will review and comment upon the type, location, design and impact of the proposed activity as a part of the A-95, MEPA and NEPA processes. When appropriate, CZM will deny federal consistency certification.

Policy (2) Protect complexes of marine resource areas of unique productivity (Areas for Preservation or Restoration (APR's)); ensure that activities in or impacting such complexes are designed and carried out to minimize adverse effects on marine productivity, habitat values, water quality, and storm buffering of the entire complex.

Along the coast of Massachusetts are found complexes or significant resource areas and other coastal environments which are unique for their contributions to marine productivity as evidenced by:

- (a) high natural productivity or potentially high productivity, shown by the presence of:
  - 1) known spawning grounds for fish,
  - 2) shellfish beds,
  - 3) commercially valuable plants,
  - 4) anadromous fish runs, and
  - 5) feeding and breeding areas for waterfowl or birds dependent on coastal resources, and
- (b) high water quality or potential to meet highest water quality standards.



Marine productivity, together with other factors, such as scenic quality, historic significance, storm buffering capacity, and recreational value make such complexes likely candidates for designation as an Area for Preservation or Restoration (APR). For a full discussion of the criteria used to designate APR's see Chapter II; for a discussion of the designation process, see Chapter IV.

Designation of an Area for Preservation or Restoration will trigger special protection measures for the area. These shall include not only priority application of the Coastal Wetlands Restriction Program to the salt marshes, sandy beaches, shellfish beds, and dunes within the complex (see Policy [1]), but some restriction of contiguous upland areas, where necessary to insure full protection of the APR. In addition, the Inland Wetlands Restriction Program shall be applied to protect such anadromous fish runs as may exist in the complex. Designation of the areas will mean greater scrutiny to state funded and permitted projects proposed for the area as the categorical exemptions for smaller projects from the reporting and review requirements of the Massachusetts Environmental Policy Act will be removed.

The designation may also give the area higher priority for receipt of open space acquisition funds, Policies (32)(26), implementation of the Scenic Rivers Act and other scenic designation authorities, Policy (16) and increased hazard area management, Policy (8). Special efforts to attain and maintain the highest levels of water quality will also be pursued, Policy (3).

In addition to the measures described above, the following activities will be categorically prohibited within designated Areas for Preservation or Restoration:\*

1. the siting of energy facilities,
2. new industrial discharges and the discharge of hazardous substances, including thermal effluent,
3. new dredging except for maintenance of existing channels or for enhancement of shellfish and other marine food productivity,
4. disposal of dredge spoil, except in instances when the spoil may be used for beach nourishment and/or dune stabilization, and
5. the siting of new sewage treatment facilities.

Furthermore, if these activities are proposed for an area which is related by natural processes (littoral currents, tides, etc.) to the APR such that the activity would impact the APR, applicants for federal or state funds or permits shall be required to demonstrate that the proposed activity will not adversely affect the characteristics cited in the Secretary of Environmental Affairs designation of the area.

Note \*In situations where compliance with this policy would conflict with the compelling public interest, the conflict resolution process should be used. (see Management chapter)

## IMPLEMENTATION

The procedures and authorities for designation of Areas for Preservation or Restoration are described in Chapter IV. The authorities to provide protection to APR's include those described following Policy (1), namely the Coastal Wetlands Restriction Act, the Wetlands, Waterways, DWPC's and Hazardous Waste Program, Ocean Sanctuaries, and the use of the federal consistency provision of the Coastal Zone Management Act with respect to U.S. Army Corps of Engineers permits for filling and dredging, National Pollution Discharge Elimination System (NPDES) permits, and federal assistance and federally conducted or supported activities. Attainment and maintenance of highest water quality levels will be assured through coordination with water quality programs as discussed under Policy (3). Other authorities and programs that will be relied upon to implement Policy (2) include:

--Massachusetts Environmental Policy Act (MEPA) (MGLA Ch. 30, SS. 61-62) - establishes an environmental review process for state actions, projects with state funding contributions, or projects requiring permits or licenses from state agencies. The intent of MEPA is to improve environmental planning and the design of activities so that they minimize damage to the natural environment, but not necessarily to stop them. The MEPA statute also directs all agencies of the Commonwealth to "review, evaluate, and determine the impact on the natural environment of all works, projects, or activities conducted by them" and "to use all practical means and measures to minimize damage to the environment." Under the MEPA Regulations, smaller projects are exempt from the reporting and review requirements; APR designation, however, invalidates the categorical exemptions, thereby providing fuller disclosure of the consequences of the environmental impacts of state related activities.

--Inland Wetlands Restriction Program (MGLA Ch. 131, S. 40A) - is similar to the Coastal Wetlands Restriction Program only it applies to freshwater wetlands. The implementation of the Program to freshwater portions of APR's provides for protection to anadromous fish runs.

--Energy Facilities Siting Council (MGLA, Ch. 164) - the Council has jurisdiction over the siting of electric generating, gas and oil facilities, major pipelines, and large transmission lines. Through a Memorandum of Understanding, the Council has agreed not to site energy facilities in areas designated and appropriately restricted as Areas for Preservation or Restoration.

--Division of Water Pollution Control (MGLA Ch. 21) - is responsible for issuing water quality certificates for point source discharges prior to issuance of NPDES permits by the EPA. DWPC also licenses the disposal of chemical, expensive, reactive and toxic substances which may constitute a danger to public health, safety, or welfare or to the environment. Through agreement with CZM, DWPC will not issue certificates or licenses for activities prohibited in APR's as specified above. Issuance of NPDES permits by EPA must also be consistent with the CZM program (see Policy [3] for further recommendations concerning DWPC's role in protecting the marine environment).

Policy (3) Support attainment of the national water quality goals for all waters of the coastal zone through coordination with existing water quality planning and management agencies; ensure that water bodies within Areas for Preservation or Restoration are given priority for achievement and, where consistent with federal and state law, maintenance of the highest level of water quality; and ensure that all activities endorsed by CZM in its policies are consistent with federal and state effluent limitations and water quality standards.

The Water Pollution Control Amendments of 1972 (PL 92-500) declared that: "it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985, ...that whenever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1973; and that it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited."

To reach these goals, the Act mandates the Environmental Protection Agency and the states, to:

- clarify and monitor present stream, river, and coastal water quality, and set standards and objectives for future water quality (Section 303, Basin Plans)
- regulate present and future point source discharges through issuance of permits which establish compliance schedules based on effluent limitations, receiving water standards, and available or practicable technology (Section 401, 402, National Pollution Discharge Elimination System, NPDES)
- plan for future waste treatment needs and construct or upgrade municipal sewer systems and treatment plants to attain a level of treatment equivalent to secondary treatment (Section 201, Treatment Works Construction Grants)
- identify waste treatment facility needs, priorities and schedules; establish a regulatory program to provide for waste treatment management on an areawide basis, the creation of new discharges, and pre-treatment of industrial and commercial wastes; identify other means necessary to carry out the above; establish a process to identify and control non-point sources, salt water intrusion, and the disposal of wastes (Section 208, Areawide Waste Treatment Management).

In Massachusetts, the requirements of the Water Pollution Control Act Amendments of 1972 are being carried out jointly by EPA, the Department of Environmental Quality Engineering, the Division of Water Pollution Control, regional planning agencies, and municipalities. Basin plans completed by the Division of Water Pollution Control have determined that, with the exception of the more heavily developed harbors and waterways, most of the water bodies of the Coastal Zone meet class SA standards (i.e., suitable for any high

water quality use including bathing and other water contact activities and the harvest of shellfish without depuration). All industrial discharges are under compliance schedules established through the National Pollution Discharge Elimination System, and sewage treatment plants and collection systems are being constructed, upgraded or proposed to be constructed for many of the more heavily populated areas of the Coastal Zone. Regional Planning Agencies, DWPC, and DEQE are formulating estimates of treatment facility needs and developing strategies for control of non-point source pollution on a region-by-region basis throughout the Coastal Zone. The first of these Section 208 areawide plans is scheduled for completion in the fall of 1977, with the others to be completed within the following year.

Additionally, within Massachusetts, regulation of the subsurface discharge of wastes, such as from individual homeowners septic systems, has been delegated to local boards of health by the Department of Environmental Quality Engineering. Applicants proposing to construct and operate subsurface disposal systems must obtain a permit from the local boards, subject to Title V of the State Environmental Code. The Code establishes minimum performance standards and setback requirements for subsurface disposal systems.

These efforts can be expected to achieve significant improvement in the quality of Massachusetts coastal waters by the 1985 target date. CZM has begun to review the outputs of the various state and regional water quality management programs and recommends the following steps for future coordination.

1. Section 303 water quality standards updates: every three years, the Division of Water Pollution Control is required to review the water quality standards and classifications of the ponds, streams, rivers and marine waters of the Coastal Zone. CZM recommends that all segments of APR's be classified SA when their respective classifications are revised and that abatement strategies be formulated which will provide for achievement of the standards.

2. Section 402 NPDES permit renewals and permits for new sources: industrial and municipal point source discharge permits are renewed every five years. CZM will review the compliance schedules established in these EPA and DWPC permits and those for new point sources to ensure that "Best Practicable Technology" or "Best Available Technology" provisions promote achievement of coastal receiving water standards, particularly in those basin segments where compliance would provide for the eventual opening of now closed, but commercially productive, shellfish beds or the use of now contaminated waters adjacent to public bathing beaches.

3. Section 208 Areawide Waste Management Plan: CZM will coordinate with DEQE, DWPC, and the Regional Planning Agencies in requiring that the CZM critical areas identified in Policies (1), (2), and (8) are given priority for protection and ensuring that processes are adequately developed for controlling non-point sources of pollution identified in the 208 plans that might adversely affect the quality of coastal receiving waters.

4. 201 Construction Grants approval: CZM recommends that DWPC require applicants proposing construction and operation of ocean outfalls for municipal waste treatment facilities to furnish the following data to provide for adequate assessment of effects on marine productivity or public health.

- a. definition of the tidal excursion for the proposed outfall location,
- b. definition of the dilution of the sewage effluent which can be expected as a result of volumes of water passing the outfall under critical conditions,
- c. calculation of the maximum pollution parameter levels expected at the proposed outfall location, particularly total and fecal coliform bacteria, total nitrogen and total phosphorous, total organics, heavy metals, and toxic substances.

If DWPC, through coordination with the Community Sanitation Program and the Division of Marine Fisheries, finds that location of the outfall will produce adverse effects on marine productivity or public health, the applicant should be required to provide an alternative site or a higher level of treatment.

DWPC's priority selection system for 201 grant applications should give weight to proposed facilities which would provide for abatement of pollution problems in areas used for shellfishing or swimming. Further, if research conducted by EPA should demonstrate that disinfection methods other than the current chlorine disinfection practices can be used effectively with less impact on the marine environment, CZM will work with DWPC to ensure that such methods are employed in municipal waste treatment. Such alternatives would include allowing seasonal variation in the minimum required chlorine discharge levels.

5. Title V State Environmental Code, subsurface discharge of wastes: CZM will assist DEQE in the development of a technical data base to provide for development of site specific performance and setback requirements for locations adjacent to coastal estuaries, embayments, and salt ponds. CZM recommends that DEQE add an additional section to the Environmental Code for critical areas, incorporating such research and establishing such standards as would be necessary for those more sensitive areas.

6. Discharge from recreational vessels: federal regulations require Marine Sanitation Devices on all recreational vessels equipped with sanitary facilities. With the approval of the Administrator of EPA, certain water bodies can be designated as no discharge areas if the protection and enhancement of the waters require greater protection than would be afforded by use of MDS's. If it is definitively determined through a basin planning study, or other water quality study that discharge from recreational vessels in a particular water segment is causing a violation of the segment's water quality standards, CZM will recommend that the segment be

designated a no-discharge water. If boating activity in this area is such that it is generally confined to the segment, sufficient pump-out facilities should be provided. CZM will actively work with EPA and DWPC and marina owners to coordinate implementation of this recommendation as necessary.

#### IMPLEMENTATION

The federal and Massachusetts laws which provide the authorities for conducting the planning and management activities described above are summarized below. The federal consistency provision of CZMA requires all federal funding and permit activities to be consistent with the approved CZM plan.

--Federal Water Pollution Control Act Amendments, 1972, (P.L. 92-300 (33 U.S. Ch. 1251-1376)) establishes the Section 208 and 303 planning processes, provides for the planning and construction of municipal waste treatment facilities (Section 201), establishes requirements for Marine Sanitation Devices (Section 312), provides for state certification of point source discharges (Section 401), establishes the NPDES system (Section 402), and establishes a process for prescribing effluent limitations for municipal and industrial point discharges and toxic wastes (Sections 306, 307). The NPDES system is currently administered in Massachusetts by the Environmental Protection Agency, and the Division of Water Pollution Control pursuant to a written agreement between them. EPA also establishes national effluent limitations for the discharge of various pollutants. As provided in the act, citizens may bring suit against any party (corporation, association, state, municipality, or instrumentality of the United States) who is alleged to be in violation of any effluent standard or limitation promulgated under the act or any order or permit issued by the Administrator or state.

--Division of Water Pollution Control (DWPC) (MGLA Ch. 21), a division of DEQE, administers the 201 construction grant program in Massachusetts, develops 303 basin plans, and comprehensive regional plans, issues joint NPDES permits with EPA, certifies point source discharges mandated by Section 401 of the federal act, and regulates such activities as sewer extensions and connections and disposal of hazardous wastes and oil.

--Department of Environmental Quality Engineering, planning division, coordinates the 208 areawide waste management programs being conducted by Regional Planning Agencies and the Department (for non-designated areas). All 208 outputs are currently being monitored and coordinated by CZM.

--Community Sanitation Program (MGLA, Ch. 111; State Environmental Code, Title 5, Regulation 2) requires permits for all subsurface discharges of wastes. Standards for percolation rates, distance from a water body, capacity of system, etc., are set by the Code promulgated by DEQE. Local Boards of Health administer the Code in conformance with these standards. Systems larger than 15,000 gallons per day are reviewed by DEQE prior to issuance of permits. CZM and DEQE are currently working on an appendix to the Code to deal with the higher sensitivities of critical areas.

--Water Resources Commission (MGLA Ch. 21, SS. 8-9) is an inter-departmental body made up of the Commissioners of each of the five Departments in Environmental Affairs and the Department of Commerce and Development and four public members. It functions as a water policy agency and coordinates the water conservation and flood prevention programs of the Commonwealth and implements the Federal Watershed Protection and Flood Prevention Act as part of its duties.

--Water Pollution Control, Marine Licenses (MGLA Ch. 91, S. 59B0)-- the Division of Water Pollution Control (DWPC) has specific authority to license marinas; under current law no license is to be issued unless adequate facilities for the collection, treatment and disposal of sewage exist. CZM recommends that in light of the federal legislation also existing in this area (33 U.S. Ch. 322) the section be administered to require pump-out facilities consistent with point 6 above.

--The Division of Marine Fisheries (MGLA Ch. 130, S. 25) - can prohibit discharge of sewage or other substances that would be injurious to fisheries, unless the Division of Community Sanitation has granted approval of the discharge after consulting with DMF.

Policy (4) Condition construction in water bodies and contiguous land areas to minimize interference with water circulation and sediment transport and to preserve water quality and marine productivity.

Estuaries and coastal embayments are particularly productive areas and prime habitat for a variety of marine species. Fresh water river discharge into estuaries helps to create favorable salinity regimes for certain marine species. Interference with natural river discharge, tidal flushing, and water circulation patterns can deny marine organisms water borne food, alter sediment transport, and create areas of stagnant, polluted water.

Thus, design and construction of solid fill piers, bulkheads, or other permanent marine structures shall be examined on a case by case basis and shall be permitted if:

- a. in estuaries and coastal embayments, flushing rates and capacity are not reduced,
- b. water quality, marine productivity, and anadromous fish runs are not adversely affected,
- c. alteration of wave generated littoral currents will not exacerbate or induce shoreline erosion or adversely alter depositional patterns. (see also Coastal Hazards Policy [8])

The design and construction of highways, roads, bridges, dams, and the diversion or impoundment of water will also be reviewed for conformance to the above provisions. Additionally, construction of these facilities in contiguous upland areas must not:

- a. increase upland erosion or induce or accelerate runoff of contaminants or otherwise adversely affect the quality of coastal receiving waters,
- b. affect the quantity of fresh water entering coastal receiving waters such that salinity levels would be adversely altered.

## IMPLEMENTATION

Environmental Affairs permits for filling in wetlands and construction in water bodies will be issued and applications for similar federal permits will be deemed consistent with the CZM Program, if they meet the tests of Policy (4). The Waterways Program, in cooperation with CZM, is developing regulations to govern its licensing activities, and the new regulations shall reflect the stipulations of Policy (4). Other authorities relied upon to implement this Policy include:

--Division of Marine Fisheries (MGLA, Ch. 130, Sec. 19) - has review authority over construction in coastal streams and may deny approval or require removal of structures preventing passage of anadromous fish to spawning areas. In reviewing proposals for construction in coastal streams, the Division is also authorized to require provision of fish ladders and other measures facilitating anadromous fish passage.

--Division of Water Supply (MGLA, Ch. 21, Sec. 8-9) - has authority over matters which relate to public water supply including surface or groundwater sources to assure the availability of a safe and adequate source of water supply for public use. On appropriate occasions, CZM, the Division of Marine Fisheries, and the Division of Water Supply will consult so as to determine whether an alteration in the supply of fresh water would affect the salinity of an area and its ability to function as a productive environment. Conditions or measures minimizing or avoiding such impacts will be examined.

--Wetlands Protection Act (MGLA, Ch. 131, Sec. 40) - After DEQE promulgates regulations for this act which are consistent with Policy (1), construction of solid fill structures shall not be permitted in a salt marsh, shellfish flat, barrier beach, or dune area.

--Waterways (MGLA, Ch. 91) - through the MOU with the Commissioner of DEQE and the Secretary, and the completed drafting of guidelines for dredging, filling, and marine construction, Waterways shall be using the criteria enumerated in this policy in their review of permits for marine construction.

--Executive Office of Transportation and Construction - CZM will work with this agency and regional transportation planning agencies funded by EOTC to ensure that CZM policies are carried out by this when their actions would affect the marine environment.

--Army Corps of Engineers (Sec. 10, Sec. 404 permits) - CZM will utilize the federal consistency provisions to ensure that all actions taken by the Corps are consistent with this policy.

Policy (5) Ensure that dredging and disposal of dredged material minimize adverse effects on marine productivity.

Policies (1) and (2) restrict or prohibit dredging in certain ecologically significant resource areas. Policy (18) in the Ports and Harbors section specifies criteria for assigning priority to federally and state funded dredging projects and for permitting private projects on the basis of port and harbor development needs. The recommendations outlined in this policy are concerned with minimizing adverse effects on the productivity of coastal waters and are to be applied regardless of location or need.



### Dredging

- a. No dredging shall occur between April 15 and June 1 in streams with herring runs if this dredging would cause high water turbidity.
- b. Dredging activity shall be timed so as to minimize adverse impact on down running juvenile fish.
- c. Hydraulic dredging, because of its lesser environmental impacts at the dredge site, is preferred to mechanical dredging except when open water disposal of fine grained material is planned. It is recognized, however, that site location, availability of dredging equipment, options for dredged material disposal, and related economic factors must be considered in determining the appropriateness of dredging method.
- d. When dredging in the vicinity of shellfish beds, adverse effects on the productivity of the beds must be minimized.
- e. Conflicts with recreational activity or other activities occurring within the water body to be dredged should be minimized.

### Sediment Analyses/ Impact Evaluation Procedures

- a. Testing procedures for evaluating the sediments to be dredged for potential impacts on disposal site environments should include methods, as they become available, which are based on biological and health parameters, in lieu of or as a supplement to existing elutriate test procedures. Grain size analyses should also be done to provide adequate assessment of the potential for the dredged material to transport by natural processes at the disposal site.

### Disposal Sites and Methods

- a. On-land disposal should be favored over ocean dumping, if appropriate sites are available, environmental impacts can be minimized, and costs are feasible.
- b. Clean dredged material should be used for beach nourishment, if the material is of appropriate grain size for the nourishment site and any additional handling costs can be justified.
- c. In-harbor sites should be favored over open ocean sites for disposal of contaminated dredged material, if the leaching of contaminants can be contained by an impermeable bulkhead or filtering system. CZM is committed to the protection of the marine environment as a productive resource, and therefore does not favor the use of ocean sites for the disposal of contaminated dredged material. If however, all other alternatives, including limiting the extent of dredging, not dredging at all, or on-land and in-harbor disposal are not feasible, CZM recommends the continued use of the Boston foul site for disposal of contaminated dredge material.

- d. For any dredge material disposal operations to occur at an open ocean site, the following required conditions shall be applied to the disposal permit:
1. use of transport vessels or barges using sudden, high volume release shall be required;
  2. transport vessels or barges shall not be overloaded;
  3. transport vessels or barges must be dead in the water when the dump is made; and
  4. fishermen must be notified of the time and route of dumping operations and be given LORAN bearings of the dump site so that interference with fishing activity can be avoided.
- e. If new open ocean disposal sites suitable for accommodating regional needs for disposal of clean dredged material are deemed necessary, such sites shall:
1. be located in areas of insignificant importance to the fisheries resources of the Commonwealth, and
  2. be limited only to priority projects meeting the benefit need criteria specified in Ports and Harbors Policy (18).

Additional criteria for selection of such sites shall include:

1. the turbidity plume and/or high density flows formed during disposal operations will not significantly impact fisheries resources, and
  2. migration of dredged material from the disposal site will not cover or adversely affect fisheries resources or will not be transported into adjacent navigation channels or otherwise reduce the water depth needed for safe navigation.
- f. If selection of a new regional open ocean disposal site for contaminated dredged material is deemed an appropriate disposal alternative, such sites shall:

1. be located in areas of insignificant importance to the fisheries resources of the Commonwealth, and
2. be limited only to priority projects meeting the benefit/need criteria specified in Ports and Harbors Policy (18).

Additional criteria for selection of such sites shall include:

1. the turbidity plume and/or the high density flows formed during disposal operations will not significantly impact fisheries resources, and
2. erosion (wave based or caused by bottom currents) of dredged material will not occur even under extreme conditions.

For such a new regional site, CZM recommends that the Corps of Engineers periodically monitor bottom conditions. This should consist of periodic bathymetric and side scan sonar surveys over the disposal area to assess any changes in the

configuration of the spoil mound. Monitoring of bottom water current velocity and underwater photography at the spoil area should be conducted periodically to determine if any dredged material is being eroded. In addition, submersible dives should be made to visually survey both the geological and biological changes. Several biological stations should also be maintained on and over the site to monitor bio-uptake of pollutants and recolonization by phytoplankton, zooplankton, indicator polychaete species (e.g. Capitella), molluscs, and other fauna.

- g. Alternative methods of dredged material disposal should also be explored, such as marsh creation or the use of dredged material for fill or construction material aggregate.

#### IMPLEMENTATION

In order to facilitate implementation of and adherence to the recommendations outlined above, CZM will:

- coordinate with the Division of Marine Fisheries in the review of proposed dredging and disposal operations insofar as these operations may affect fisheries resources;

- work with the Waterways Program to prepare guidelines and regulations which will specify how the above requirements are to be carried out in their permitting functions and funding activities;

- coordinate with the Department of Environmental Quality Engineering in selecting new sites for on-land disposal or open ocean disposal of contaminated dredge material;

- provide technical assistance and funding to localities for feasibility studies to:

- a. identify opportunities for in-harbor and/or on-land disposal, especially where beneficial use is possible;
- b. identify suitable open ocean sites for disposal of uncontaminated dredge material.

- coordinate with the Army Corps of Engineers and involved state agencies through the Dredge Spoil Task Force to ensure that all permit and funding activities are consistent with the above recommendations.

- coordinate with the US Environmental Protection Agency in the implementation of its Ocean Dumping Policy and with the National Marine Fisheries Service and the US Fish and Wildlife Service in the review of proposed disposal projects

The regulatory and funding authorities of the Waterways Program were summarized in Policy (1), as was the scope of the state Ocean Sanctuaries Acts administered by the Department of Environmental Management. Other authorities that apply to the above policy include:

--Federal Permits for Filling (Federal Water Pollution Control Act of 1972, Section 404) and Transportation of Dredged Material (Marine Protection, Research and Sanctuaries Act of 1972, Section 103) - authorizes the Corps to issue permits for discharge of dredged or fill material in the waters of the United States and for transportation of dredged material for the purpose of dumping in ocean waters. The Environmental Protection Agency, under Section 404 is empowered to review applications prior to issuance of the permit by the Corps and can deny or restrict the use of the proposed disposal site or sites. CZM will approve certificates of consistency for Corps permits if the proposed actions are consistent with the above policy. The Division of Water Pollution Control must also issue a water quality certificate prior to issuance of the 404 permit by the Corps.

--Community Sanitation Program (MGLA, Ch. 111, Sec. 150A) - requires the operator of any solid refuse disposal facility to be in conformance with solid waste disposal facility standards and guidelines adopted by DEQE. Use of on-land sites for disposal of dredged material must be in conformance with this requirement.

Policy (6) Accommodate off-shore sand and gravel mining needs in areas and in ways that will not adversely affect marine resources and navigation.

CZM recommends that the following locational guidelines be incorporated into regulations for offshore sand and gravel mining and ocean sanctuary regulations where applicable:

1. mining should be prohibited in marine areas that serve as sources of sediment supply for coastal beaches or in areas where alteration of bottom contours would adversely modify wave and current patterns affecting shoreline areas. Generally these areas will be landward of the 80' contour.
2. mining should be prohibited in areas where contaminated dredge material has been deposited or other hazardous substances have been dumped.
3. mining should be prohibited within a specified distance of submarine cables and pipelines.
4. mining should be prohibited in navigation channels or anchorages unless shipping concerns can be safely accommodated.
5. mining should be prohibited in shellfish, finfish spawning and nursery areas or in other areas of productive sport or commercial fisheries.

CZM recommends the following operational guidelines also be incorporated in regulations:

1. all dredging vessels should be adequately lit and equipped with fog horns to prevent accidental collisions.
2. information on dredge's location, duration of mining and navigation lights should be included in Coast Guard's notices to mariners.

## IMPLEMENTATION MEASURES

--Division of Mineral Resources (MGLA Ch. 21, s. 54) licenses exploration and extraction of mineral resources in the coastal waters of the state. Mineral resources include oil, gas, metals, ores, minerals, rock, soil, and sand and gravel, etc. Removal of materials for beach replenishment, navigation works, etc., are exempt from the law. CZM will work with this program to insure that the CZM recommendations will be enforced.

--Ocean Sanctuaries Acts, Waterways, Corps of Engineers programs will be coordinated via Memoranda of Understanding to insure that the preceding recommendations are incorporated into the regulations and operating procedures of these programs.

--Division of Water Pollution Control (MGLA, Ch. 21) - must issue a water quality certificate for any activity in the water column. CZM will coordinate with the Division to ensure consistency with this policy as regards to any mining activity.

--MEPA, NEPA, and A-95 Reviews will be continually conducted by CZM to monitor the activities of other state and federal agencies, and CZM will review proposals for offshore sand and gravel mining to ensure consistency with this policy.

Policy (7) Encourage and assist commercial fisheries research and development, restoration of fishery resources, the development of extensive and intensive aquaculture, and anadromous fish enhancement, initiated at local, state, and federal levels.

The CZM program will be actively involved with local, private, state and federal institutions to direct research, technology, and project development programs towards enhancing fisheries productivity and solving fisheries problems. CZM shall act as a source of information on Federal and institutional funding programs. CZM will monitor Federal monies and funding programs which may be tapped by Massachusetts for fisheries related projects. The program will also work closely with the Division of Marine Fisheries on instituting generic studies, when appropriate, on institutional and economic problems related to initiating fishery programs. CZM will support, through lobbying efforts with Federal agencies, requests for financial support of economic programs. CZM will continue its active involvement in the State 200-mile Workgroup. The CZM program will continue to work with the Federal government in developing regulations which will protect the fishing industry from any adverse impacts arising from OCS development.

A variety of federal programs provide research and project funds that are germane to this policy. The more important of these programs are:

--National Marine Fisheries Service administers federal fisheries management programs and studies the biological productivity of coastal and offshore waters. The Service also funds anadromous fish restoration programs and commercial fisheries research and development studies. Grants are extended to states for the development,

implementation, administration, monitoring, and evaluation of fisheries management plans, for research on shellfish species which have or may have commercial value, and for research on shellfish pathological problems and mortality. The Service also administers loan programs to commercial fishermen. CZM will work with the Service and its state counterpart, the Division of Marine Fisheries, to ensure that these programs are adequately funded and directed toward meeting the needs of the Massachusetts fishing industry and toward enhancing fisheries productivity.

--United States Fish and Wildlife Service provides anadromous fish conservation grants to states and other entities to conserve, develop, and enhance anadromous fish resources. The Bureau also extends grants to state fish and game agencies to support projects to restore and maintain sport fish populations. CZM will work with the Bureau, the Massachusetts Fisheries and Wildlife Division and the Massachusetts Division of Marine Fisheries to promote restoration of anadromous fish runs in the coastal zone and will advocate adequate funding for such projects during A-95 and other reviews.

--Office of Sea Grant extends financial support to Sea Grant institutions. In Massachusetts these include the Massachusetts Institute of Technology and the Woods Hole Oceanographic Institution. CZM will work with the two institutions to ensure that their Sea Grant programs adequately reflect the research and extension needs of the commercial and sports fishing industry. Desirable Sea Grant programs for Massachusetts may include:

1. support for biological research on species that have commercial significance, on aquaculture methods, and on improving or devising techniques and methods used for harvesting and processing, and
2. advisory services for fishermen and fish processors on new techniques and methods of harvest, processing, and sale.

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## Coastal Hazards

## COASTAL HAZARDS

### SUMMARY OF FINDINGS

The attractiveness of the Massachusetts coastline comes largely from the constant shaping and reworking of shoreline features by natural processes unique to the coastal zone. These same processes, however, periodically turn the coastal zone into a hostile environment where the powerful forces of flooding and erosion cause widespread damage to manmade structures and facilities. Consider, for example:

- The great hurricane of 1938 was estimated to have caused \$56.9 million worth of damage to the communities bordering Buzzards Bay and \$6.7 million in damages to the Cape Cod region.<sup>1</sup>
- In 1954, hurricane Carol caused damages of \$46.9 million to the Buzzards Bay area and \$7.0 million to the Cape Cod region.<sup>1</sup>
- A single northeast storm in the winter of 1959 caused \$2.7 million worth of damages to Boston Harbor and \$445,000 in damages to South Shore communities.<sup>2</sup>
- Northeast storms in 1961 and 1972, respectively, caused \$300,000 in damages to the North Shore region and \$1.3 million in damages to the Town of Scituate alone.<sup>2</sup>

While the increasing effectiveness of storm warning services and evacuation preparedness plans has substantially reduced the threat to human lives posed by coastal flooding and erosion, increased development of hazard prone areas exposes more and more structures to direct attack by storm forces.

Unwise development of coastal flood and erosion prone areas is commonly attributed to the public's ignorance of the potential risks to both lives and property. The recent public opinion survey conducted by the Massachusetts Coastal Zone Management Program finds to the contrary. Of the coastal residents polled, 55% felt that erosion of coastal areas was at least somewhat of a problem, 33% felt that coastal flooding is a threat to some areas, and 47% felt that development should be prohibited within coastal flood and erosion hazard areas. Additionally, as of March 31, 1976, \$188 million of nationally subsidized flood insurance has been purchased by owners of property within the coastal communities, thus indicating the gravity of concern felt by coastal residents. Federal subsidies of the cost of this insurance currently amount to almost \$3 million,<sup>3</sup> and annual subsidies of similar magnitude will continue for several years until the program progresses to its second phase in participating coastal communities.

Obviously, then, the threat of flood and erosion damage is perceived to be very real. However, as the value of coastal properties continues to escalate, many coastal residents will continue to risk property damage in order to enjoy the economic and aesthetic amenities offered by coastal living. On the other hand, improved water quality and the provision of other amenities in more protected, urban areas may reduce pressure for development of the remaining undeveloped hazard prone areas.

Much of the damage from flooding and erosion could be avoided if owners of coastal property and developers would respect the value of natural buffers along the coast. Unfortunately, only recently has the protective role of coastal landforms and processes become more clearly understood. For example, beaches and marshes dissipate destructive storm waves over their gradual slopes; beach grasses and other coastal vegetation stabilize dune systems and prevent direct wave attack against inland areas; erosion of one segment of beach or bluffs provides sediment material for accretion of another. In short, all coastal systems function in a state of dynamic equilibrium to withstand wave and wind forces.

Development of these sensitive buffer areas for residential, commercial, or recreational uses has not only left structures and facilities exposed to destructive forces, but also seriously impaired the ability of these buffers to protect inland development areas, scenic resources, and other unique aspects of the coastal zone. Further, these buffers often support important wildlife habitat, such as tern nesting areas.

In response to the need to protect development in hazardous areas, massive protective structures have been built and in some instances have been effective. However, they are becoming increasingly recognized as, at best, expensive short term solutions which may only exacerbate problems elsewhere along the coast. With the implementation of the National Flood Insurance Program and other recent federal programs, the federal government is putting greater emphasis on non-structural measures. However, the CZM Program finds that still stronger programs are needed to prevent unwise development of hazardous areas within the coastal zone and preserve and restore the natural protective functions of coastal landforms and processes.

A high degree of cooperation among federal, state, and local entities will be required to facilitate optimal use of remaining undeveloped buffer land along the coast, to restore previously impaired buffer areas, to prevent development that would exacerbate existing hazards, and to implement limited structural solutions in situations where the need for structural protection is unquestioned. The policies of this section are designed to meet these needs and be consistent with emerging federal policy that directs the burden of risk in hazardous areas to be shifted to owners of property within these areas.<sup>4</sup>

## NATURAL PROCESSES RELATING TO FLOODING AND EROSION OF COASTAL AREAS

Two major types of storms affect the coastline of Massachusetts: hurricanes and northeast storms. Because these two types of storms attack the coast from different directions, the magnitude of flood and erosion damage will vary with the exposure of coastal communities to the direction of storm approach. Damage from hurricanes occurs chiefly along the southern Massachusetts coastline from the Rhode Island line into Buzzards Bay, the Elizabeth Islands, Martha's Vineyard, Nantucket, and the southern Cape Cod shoreline eastward to Chatham. The eastern stretch of the Cape Cod coast from Chatham north to Provincetown is more vulnerable to northeast storms. Shores along western stretches of the Cape from Provincetown to Brewster are generally unaffected by northeast storms, but are seriously eroding in certain areas. The remainder of the Massachusetts shoreline northward is highly susceptible to northeast storm flooding and suffers erosion in varying amounts depending on the severity of each storm. Of course, individual stretches of coastline within these broad ranges may vary significantly with respect to vulnerability to hurricanes, northeast storms and storms striking the coast from other directions.

The accompanying map depicts the approximate locations of the coastal reaches where erosion is most critical. Erosion in these areas is evidenced by a loss in significant recreational beach benefits, a significant loss in other public lands or facilities, significant damage or destruction of private property, or significant change in the acreage or configuration of conservation lands. Because the rate of erosion in a particular area is highly variable from year to year and is not easily quantified "critical erosion" is typically defined to mean erosion of shorefront property that causes it to become unusable now or in the near future.<sup>5</sup>

Maximum flooding along a particular coastline will occur when the storm winds blow onshore at or near the time of high tide (especially during spring tides) when water elevations reach their highest levels. Strong winds exerting pressure on the water's surface may cause it to "pile up" against the coast resulting in the effect called "storm surge."

While severe coastal flooding and erosion are typically the result of occasional tropical or northeast storms, shoreline areas are also subjected daily to normal wave and aeolian (wind) effects which cause constant shifts in the configuration of beaches, sand dunes, barrier beaches, and other coastal landforms. Through the off-shore transport of sediment material in currents parallel to the shore (littoral drift) all of these coastal formations are linked together as sources of sediment or areas of deposition. Thus, erosion of one stretch of sand cliff or beach may be supplying sand for replenishment of a beach situated down coast. Therefore, any action, either natural (such as a storm) or manmade (such as the construction of a groin), affecting one segment of coast can cause detrimental or beneficial effects on another stretch of coast directly

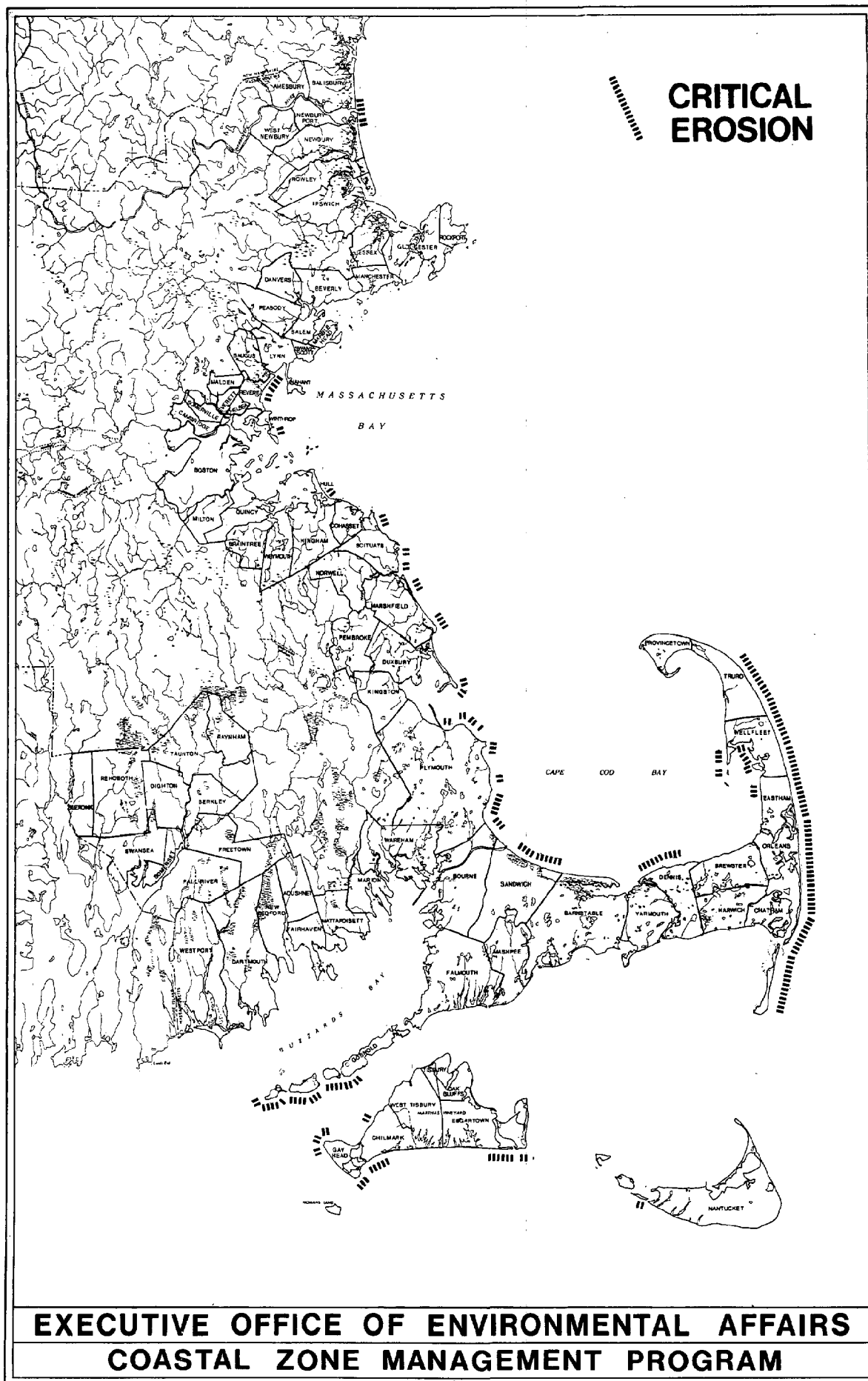


Figure 1 112

adjacent or miles down coast in the direction of the littoral flow. Sand also moves perpendicular to the beach--onshore during the summer when low energy waves prevail and offshore in the winter season due to higher energy conditions associated with storms. As with littoral movement, if the onshore-offshore dynamic process is disturbed, negative effects may occur to the beach.

When left to develop and evolve in an unaltered natural state, the various types of coastal landforms will function to weaken and buffer the high energy effects of storm forces as follows:

Sand beaches and dune systems: The gradual slope of the beach face dissipates wave energy; sand deposited by littoral processes is transported via wind to form dunes, and is subsequently stabilized by vegetation. The natural buffer created protects inland areas from wave attack.

Barrier beaches: The beach and dune systems function as above, protecting landward estuaries, tidal flats, and salt ponds, as well as mainland shores. Overwashing of the dunes during storms causes redistribution of substrate for sand dune formation and marsh development, thus maintaining the height of backshore areas, and causing slow landward migration. Natural inlets may also be breached in these systems periodically, providing increased circulation of salt ponds and lagoons and a redistribution of sediment material.

Offshore bars: The submerged bars dissipate winter wave energy during storms, and provide a sediment source for seasonal rebuilding of sand beaches and landward dunes.

Sand and Clay Bluffs: Erosion of bluff slopes provides sediment material to replenish downcoast beaches.

Wetlands: The gradual slope of the marsh beds and binding vegetation dissipates incoming wave energy during storm periods, causing deposition of additional sediment material. Marshes in upstream areas of estuarine water bodies may also provide some natural storage of fresh flood waters.

#### ADVERSE EFFECTS OF DEVELOPMENT OF FLOOD AND EROSION PRONE AREAS

Unfortunately, intensive development of the coastal zone for tourism and recreation, housing, and other uses have often resulted in serious alteration of natural protective landforms and resulted in the implementation of futile attempts to combat nature through construction of massive engineering works. Because of economic incentives, ignorance, or willful disregard of the importance of maintaining natural buffering functions, building practices have left structures in many areas directly exposed to storm surge, wave attack, and erosive forces, and have resulted in the deterioration of coastal habitat, scenic attributes, and recreation resources.



Principal adverse effects of construction of residential or commercial structures and ancillary facilities on beaches, sand dunes, and barrier beaches may include:

- Cutting of dunes: regrading of dune areas for construction of buildings and other facilities reduces the capabilities of the dune system to dissipate wave energy.
- Disruption of natural wind flow and depositional patterns: obstructing buildings cause scouring effects which may result in dune "blowouts" wherein vegetation is destroyed and the normal pattern of parallel dune ridges is adversely disrupted. The protective dune system is then more vulnerable to breaching by storm waves.
- Obstruction of overwash: obstruction by buildings and other facilities or improper restoration of dune areas will impair the "constructive" overwash of barrier beaches during storm periods. Landward deposition of sediment which builds up the interior and backshore areas of the beaches will be prevented.
- Acceleration of beach/dune face erosion: construction of sea walls or the cutting and steepening of foredune slopes will cause increased erosion of the beach face since wave energy will be concentrated rather than dissipated over a gradual slope.
- Acceleration of bluff erosion: building on the edges of bluff crests removes binding vegetation, increases surface runoff, loosens bluff material, and accelerates erosion of bluff slopes.
- Encroachment of development in coastal wetlands, estuaries, and tidal flats: filling of these shallow open expanses reduces the area over which wave energy can be dissipated. Their flood storage potential may also be reduced if located in mouths or embayments.
- Ground water withdrawal and contamination: human consumption of the ground water supply reduces the limited quantity of fresh water available to the dependent vegetation and increases the likelihood of salt water intrusion. Seepage from septic systems or storm-damaged sewer systems may seriously pollute local ground water supplies and adjacent marshlands and shellfish beds.
- Disruption of surface runoff and sub-surface infiltration: pavement of roads and parking lots with impermeable surfaces will increase surface runoff and reduce the infiltration of fresh water needed to support vegetation. Furthermore, recreational over-use of coastal areas may also degrade the buffering functions of natural landforms. For example, beach grass is acutely sensitive to trampling--therefore excessive

foot traffic in sand dune areas may cause erosion of dune slopes, as may heavy use of off-road recreational vehicles.

#### STATE AND FEDERAL STRUCTURAL PROGRAMS

Through the combined efforts of the United States Army Corps of Engineers, the Massachusetts Division of Waterways, and the Metropolitan District Commission, a number of structural protective measures, such as seawalls, groins, jetties, breakwaters, and dikes have been implemented over the years along the coast of Massachusetts to protect development in hazard prone areas.<sup>6</sup> Projects implemented by these agencies have met with varying degrees of success, and in some cases may even have accelerated erosion by depriving down drift beaches of sand or by concentrating energy on the beach face at the base of the structures.<sup>7</sup> The Division of Waterways receives no appropriation for maintenance of structures it builds. Responsibility for maintenance is placed on local communities who are often unable or reluctant to meet the substantial costs involved. Therefore, the Division of Waterways periodically must completely rebuild deteriorated structures.<sup>8</sup>

#### THE NATIONAL FLOOD INSURANCE PROGRAM AND OTHER NON-STRUCTURAL PROGRAMS

On the federal level, the major focus of flood plain management has been the 1968 National Flood Insurance Program (NFIP) amended in 1973 and administered by the Department of Housing and Urban Development. Created in the effort to shift the financial burden of flood risk to coastal landowners and away from federally appropriated disaster relief (for which the public at large must bear the costs), principal features of the program include:

1. Federally subsidized insurance coverage for existing structures in flood prone areas designated on preliminary hazard boundary maps, (see figure below).
2. Federal sanctions against the allocation of federal acquisition or construction funds unless the recipient community is a member of the national program.
3. Mandatory community management regulations including requirements for floor elevations in flood and erosion prone areas, use of flood resistant materials, anchoring of building supports, use of flood resistant materials, building set backs, and non-alteration of flood flows or sand dunes. Enforcement of the regulations through local building permit processes is periodically monitored by the FIA.
4. Delineation on Flood Insurance Rate Maps (FIRM's) of special flood hazard areas (A zones--areas within the 100

Vol I p. 116 item 4)

change "up to 90%" to "50%-55%"

s-

special flood hazard areas subject to the effects of storm

Vol I p. 116 item 5) add the following:

"FIA is initiating a study to determine whether such a "natural buffering capability" is carried out by coastal wetlands, which types of these perform such a role and under what circumstances, and how to regulate development to protect such a function if it is found to exist."

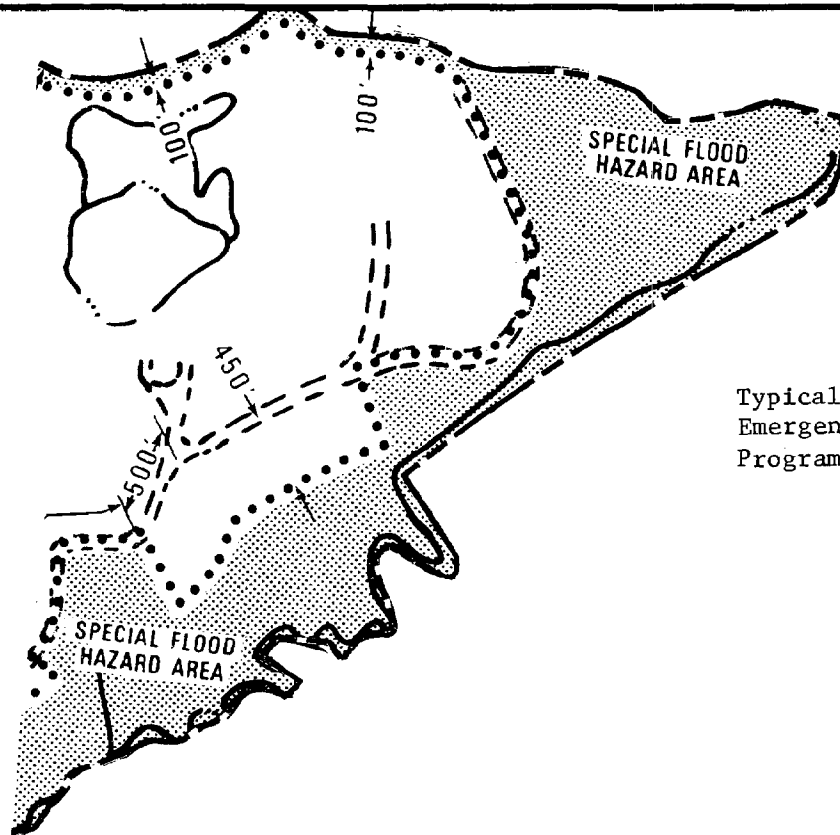
Vol I p. 116 item 6) line 2 change "will" to "may" and add the following sentence at the end:

"On the other hand, inclusion of an area within a flood hazard zone on a FIRM, may cause a decline in market values."

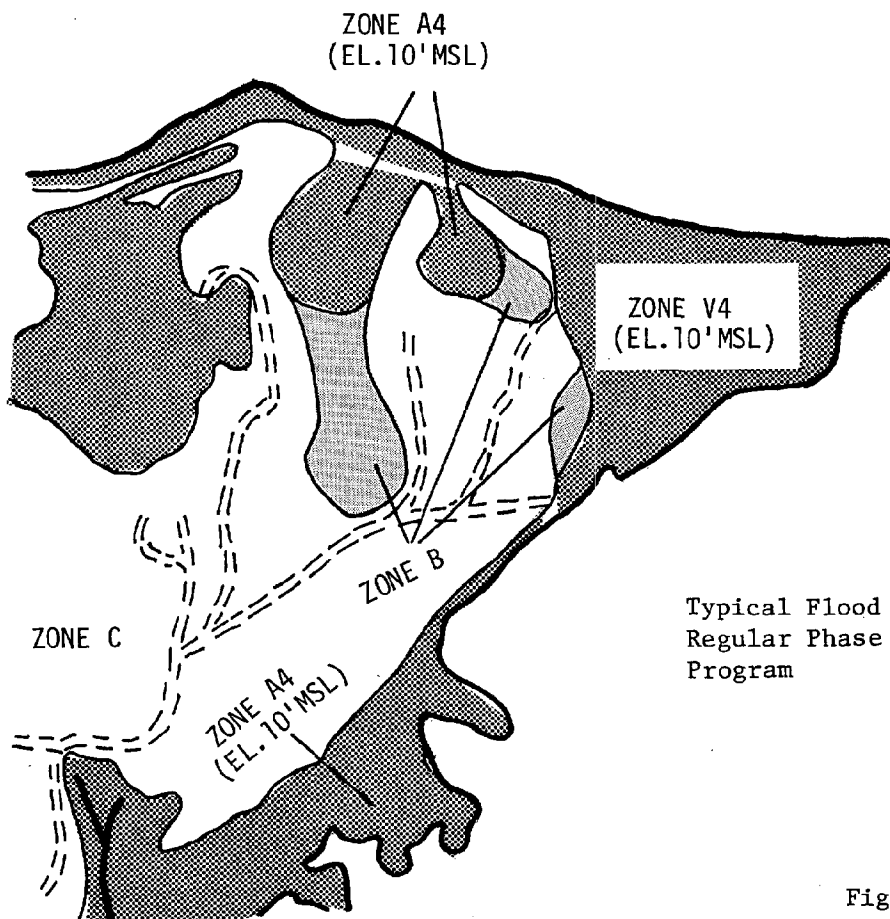
established for the program will reduce loss of life and property over the long term, and the financial losses of private landowners will be substantially reduced.

2. the flood insurance rate mapping process being coordinated by the FIA will provide an excellent data base to delineate flood and erosion prone areas for future management.
3. the structural standards required of new development in hazardous areas will discourage building where the costs of complying with the standards would be prohibitive.
4. the provisions for inexpensive insurance (there is a maximum chargeable premium rate and costs are typically subsidized up to 90% by the federal government) may do little to encourage relocation of existing development out of flood or erosion prone areas. Conversion of seasonal housing to year round use may in fact be encouraged.<sup>10</sup>
5. alteration of natural landforms in high hazard areas will be prohibited, but natural buffering capabilities in other hazard areas may be degraded because required construction standards relate only to improving structural integrity.
6. continued public subsidy to sustain development in hazardous areas will foster increased property values which may lead to increased pressure for additional subsidies to construct protective engineering works or provide other community services that will be subject to a high risk of damage.

\*Note: The 100 year flood means "the flood having a one percent chance of being equalled or exceeded in any given year."



Typical Flood Hazard Boundary Map  
Emergency Phase of Flood Insurance  
Program



Typical Flood Insurance Rate Map (FIRM)  
Regular Phase of Flood Insurance  
Program

Figure

Given its basic purpose, that of reducing loss of life and property, the NFIP represents a major step in the right direction. However, since the minimum structural standards required of communities participating in the program may be taken to be maximum level management controls, it is clear that additional guidance (e.g., technical assistance from CZM in developing zoning by-laws) may be needed to develop optimal solutions to effective hazard area management (e.g. floodplain zoning which restricts the type of development as well as ensures the structural integrity of permitted uses).

With the passage of the Water Resources Development Act of 1974, the federal government has directed that non-structural hazard area management measures be given equal consideration with traditional structural measures in the evaluation of flood protection alternatives. Section 73 of this Act directs that:

. . . in survey, planning, or design by any federal agency of any project involving flood protection, consideration shall be given to non-structural alternatives to prevent or reduce flood damages. These non-structural alternatives would include such things as flood-proofing of structures; flood plain acquisition for recreational fish and wildlife, and other public purpose; and relocation.<sup>11</sup>

While awaiting development of a national strategy to optimize flood management benefits through combinations of the management techniques suggested in Section 73, the Office of Management and Budget has restricted appropriations related to this Act. However, when implementation of this Act on a larger scale becomes a reality, there may be opportunities for widespread benefits to flood-prone communities in the coastal zone.<sup>12</sup>

Non-structural measures such as dune restoration and stabilization are supported by Conservation District and Resource Conservation and Development programs of the Soil Conservation Service, U.S. Department of Agriculture. Additionally, local conservation commissions sponsor dune restoration projects using plant materials supplied by private concerns. Also, with the assistance of the SCS Pilgrim RC&D Program, the Massachusetts Coastal Zone Management Program has helped to establish a nursery to supply coastal plant materials for state park restoration programs. These types of non-structural measures are typically less expensive than structural measures, may more closely stimulate effects of natural processes, and if development and access can be properly restricted on the project areas, the buffering functions of dunes and beaches can be significantly restored. Techniques that can be employed include, for example: the positioning of snow fences to trap wind-transported sediment, or the planting of vegetation to bind sediment and stabilize dunes. Artificial nourishment of beaches with sand extracted elsewhere has also been used effectively in some areas.

## OBJECTIVES

The preceding discussion suggests that management of hazardous areas in the coastal zone should be designed to achieve the following objectives:

1. To reduce current losses of property and lives and to prevent future losses;
2. To preserve and restore coastal landforms and natural processes which are essential to the protection of coastal environments and landward areas; and
3. To maximize the effectiveness and reduce the costs of public investment in hazard prone areas.

## CZM POLICIES AND PROGRAM RECOMMENDATIONS

Policy (8) Discourage further growth and development in hazardous areas and preserve natural buffers throughout the coastal zone.

- a. Restrict new development in identified V and E zones and in barrier beach, sandy beach, primary dune, and salt marsh Significant Resource Areas to the permitted uses defined under Policy 1, Marine Environment section.
- b. Condition new development in contiguous upland areas within a zone extending landward to 100 feet inland of the limit of the 100 year flood, especially within designated Areas for Preservation or Restoration, to ensure that existing hazards are not exacerbated and that the proposed uses or activities are appropriate in light of the risks of damage.
- c. Ensure that development proposed to be located in intertidal areas or offshore in coastal water bodies will not exacerbate existing erosion or flooding hazards in adjacent or downcoast areas.
- d. Encourage and support local floodplain zoning and other management of hazardous areas in all coastal towns.

CZM recognizes that many of the hazardous areas within the coastal zone have already been extensively developed, and that it is unrealistic to expect or demand relocation of this development out of the flood zone or away from critically eroding areas. In communities that participate in the National Flood Insurance Program, protection against financial losses is available to property owners, and the increasing effectiveness of storm warning services has substantially reduced the potential for loss of lives should a major storm strike

the coast. Therefore, CZM sees the need to concentrate on preventing new growth and development that would be prone to damage, would exacerbate existing hazards, or would impair the ability of natural buffers to protect both existing development in hazardous zones and development in adjacent inland areas.\* The above policies and Policy (9) are structured to meet this need.

#### IMPLEMENTATION

Policy (8a) is virtually synonymous with Policy (1) and as noted in the Marine Environment section, will be implemented over the long term using state Wetlands Restriction authorities, with priority for restriction assigned to Significant Resource Areas located within designated Areas for Preservation or Restoration. In the interim, local conservation commissions will implement this policy, as well as Policy (8b) as indicated in the Implementation section of Policy (1). The exercise of DEQE's superceding orders shall be consistent with these policies. Policy (8c) will be implemented using the state tidelands and Corps of Engineers permit authorities to ensure that construction of proposed development in water bodies will not adversely alter littoral processes or circulation patterns thereby causing accelerated erosion of shoreline areas (See Policy (4), Marine Environment section, as well). Additionally, CZM encourages all coastal communities to adopt local flood hazard zoning to proscribe the types of development and activities suitable to hazardous areas along the coast.

--National Flood Insurance Program, 1968, Amended 1973 - Regardless of the form of local or state action to control development in hazardous areas, communities participating in the NFIP must adopt minimum management criteria relating to floor elevations and flood proofing of new development. Under new regulations promulgated by FIA (Federal Register, Vol. 41, No. 207, October 26, 1976), alteration of sand dunes in V zones that would increase the potential for flood damage will be prohibited. All new development or proposed improvements in E zones will also be subject to local building permit denial or condition if they would not be safe from damage, cause flood-related erosion hazards, or otherwise exacerbate existing flood-related erosion hazards. Setbacks for new development to create a safety buffer zone will also be required.<sup>13</sup> CZM endorses these new regulations and will collaborate with the Federal Insurance Administration to ensure consistency between administration of the NFIP and the CZM Program (CZMA, 1972, Section 307). As communities prepare their floodplain management regulations required for participation in the regular phase of the NFIP, they will be encouraged to adopt provisions which restrict the use of hazardous areas as recommended in Policy (8), as well as specify structural requirements as directed by the NFIP. Additionally, CZM will

\*Note: In extreme cases where there would be widespread public benefit, structural solutions may be appropriate to protect existing development. (See Policy (12))

encourage the FIA to assign priority to mapping hazardous areas within designated APR's.

--Coastal Wetlands Restriction Program (MGLA Ch. 130, S. 105) - Under this Act, "coastal wetlands" are defined as any land subject to "coastal storm flowage" and such contiguous land deemed necessary to affect in order to carry out the purposes of the Act. Therefore, barrier beach systems, primary sand dunes, sandy beaches, and salt marshes subject to storm flowage are fully covered by this Act, as will be V and E zone areas once they are designated on community Flood Insurance Rate Maps prepared for the HUD flood insurance program. As part of the Department of Environmental Management's responsibilities to carry out the CZM Program, coastal wetlands within Designated APR's shall be assigned first priority for mapping and restriction.

--Wetlands Program (MGLA Ch. 131, S. 40) - Empowers local conservation commissions to issue Orders of Conditions or deny permits for activities on "...any land subject to coastal storm flowage and flooding" if that land is significant to flood "control" or "storm damage prevention." CZM will continue to work with DEQE to develop new regulations for the wetlands protection program which will provide greater specificity for tests of significance, particularly with regard to the prevention of damage to natural buffers. DEQE will review all Notices of Intent and Orders of Condition to ensure conformance with Policy (8).

--Waterways Program (MGLA, Ch. 91, S. 14) - Authorizes the Waterways Program to license construction or extension of any structure, the filling of any lands or flats, the dumping of dredged or other materials in any of the tidewaters of the state. The removal of stones, gravel, sand or other material from any shore, or the destruction of vegetation may also be prohibited if determined to be injurious to any harbor or other navigable water (MGLA Ch. 91, S. 30). CZM will work with the Waterways Program to develop regulations to ensure that review of proposed projects includes determination of potential effects on existing flooding or erosion hazards and that projects are appropriately conditioned or denied. These regulations will stipulate how the Waterways Program will be integrated with the Wetlands Program.

--Federal Permits for Filling (Federal Water Pollution Control Act of 1972, Section 404), Transportation of Dredged Material (Marine Protection, Research and Sanctuaries Act of 1972, Section 103), and Alterations in Navigable Waters of the United States (River and Harbor Act of 1899, Section 10) - Authorizes the Corps of Engineers to issue permits for discharge of dredged or fill material in waters of the United States, for transportation of dredged material for the purpose of dumping in ocean waters, and for structures outside of established federal lines (such as piers, floats, moorings, bulkheads, outfalls, pipelines, overhead and submarine cables, groins, jetties and other obstructions, and for excavating from or depositing materials in such waters. CZM will only approve certificates of consistency for Corps permits if the proposed action is consistent with Policy (8).



--Zoning Enabling Act (MGLA Ch. 40A, S. 2) - Authorized local floodplain zoning and conservancy zoning whereby ordinances can be enacted to safeguard public health and safety on lands "subject to seasonal or periodic flooding." CZM will work with the FIA as noted above, and with the office of Local Assistance of the Department of Community Affairs to provide the legal research and planning skills needed to develop adequate floodplain zoning.

--Conservation Restriction Program (MGLA Ch. 184, S. 31-33) - Authorizes voluntary conservation restrictions for flood or erosion control. Land restricted under this authority is assessed as a separate parcel for tax purposes (Acts of 1972, Chapter 719).

Policy (9) Ensure that state and federally funded public works projects proposed for location within the 100 year coastal floodplain will:

- a. not exacerbate existing hazards or damage natural buffers,
- b. be reasonably safe from flood and erosion related damage, and
- c. not promote growth and development in damage prone or buffer areas, especially in undeveloped areas of APR's.

While Policy (8) concerns private development, the above policy is aimed at ensuring the soundness of public investment for public works projects in hazardous areas of the coastal zone. Public facilities such as roads or sewers that are constructed in hazardous areas may be subjected to continual damage necessitating costly repair and maintenance. Secondly, the provision of public services in hazardous areas with the capacity to serve growth beyond existing development may encourage new development that would be incompatible with the damage risks and the need to protect natural buffers. Thirdly, increasing public services, together with the availability of subsidized flood insurance, may increase private property values, thereby inducing pressure for additional federal or state subsidies to build shoreline protection structures. Such a result would be inconsistent with the national policy to shift the burden of risk of living in hazardous areas to the property owner<sup>14</sup> and may induce spiralling subsidies of development in hazardous areas, as well as discourage voluntary relocation.

The installation of sewerage systems and treatment plants in highly dynamic and unstable environments, such as barrier beaches, should be discouraged, since construction of these facilities may, as noted above, encourage conversion of summer homes to year-round use or stimulate some new development.<sup>15</sup> Installation of sewerage without recharge facilities may cause depletion of critical ground water supplies. Additionally, a system failure during a major tidal flood could cause a severe pollution problem. Thus, structural solutions in high risk hazardous areas should be implemented only if warranted by a severe water pollution problem and if non-structural solutions, such as upgrading of existing subsurface disposal systems are deemed ineffective or cost prohibitive. If implemented, the designed capacity of sewerage systems should be limited to the existing peak population and the systems should be adequately flood proofed.

## IMPLEMENTATION

Principle implementation measures will include existing review processes and advance coordination with agencies responsible for public investment decisions in the coastal zone.

--A-95, NEPA, MEPA - CZM will use these existing review processes to ensure that federal or state funded projects proposed for construction within the 100 year flood zone meet the criteria above. Particular scrutiny will be given to design capacity, siting of facility components and service area, adequacy of flood proofing, and the nature and extent of site disturbance necessitated by construction of the proposed project. Where necessary, CZM will use the federal consistency provision of the Coastal Zone Management Act to ensure that CZM concerns are met. (For further guidance as to how CZM will coordinate with agencies funding transportation improvements and sewage treatment facilities, see Policy (35) regarding public investment in infrastructure.)

Policy (10) Acquire undeveloped hazard prone areas for conservation or recreation use.

Acquisition of land, either in full or in part through easement purchase, is a common means of preserving or expanding open space. It is also the most effective tool for preventing growth and development that would be vulnerable to storm damage or would impair the buffering functions of natural areas. Further, most open space uses will not require construction of extensive facilities and therefore are appropriate for damage prone areas.

On the state level, it is unlikely that sufficient funds will be available for the acquisition of lands on the basis of hazard protection alone, since the availability of acquisition funds will typically be dependent on the recreational benefits that can be derived. Therefore, hazard prone lands should be given priority for state acquisition if either:

- a. undevelopable because of the hazards present; e.g., a rapid rate of erosion makes a piece of shorefront property unsellable or unbuildable; or
  - b. they serve as a natural buffer protecting public investments in nearby or downcoast areas;
- and if: they can be improved through non-structural measures so that they can sustain an appropriate type and level of public recreational activity, given the nature of the hazards present.

Acquisition by local conservation commissions, on the other hand, can be used to conserve the buffering or ecological value of hazard prone areas without requiring that intensive recreational use be supported. It is therefore recommended that hazard prone lands be considered for local acquisition (with or without state assistance) if they serve as natural protective buffers or if their buffering capabilities could be restored through non-structural improvements, particularly if local zoning or other controls are inadequate to prevent

development that would be vulnerable to damage or would exacerbate existing hazards.

Acquisition by any level of government should also be given serious consideration if federal, state, or local funds have been repeatedly allocated for flood proofing or repair of damaged utilities, roads, bridges or other public services. Additionally, in extreme cases, acquisition of substantially damaged developed areas may be justified in order to prevent redevelopment that would again risk major losses, degrade natural buffering functions, or require continued public subsidy (such as disaster relief or flood insurance). "Substantially damaged" should be defined as structural damage whose value amounts to greater than 75% of the market value of the structure(s) prior to occurrence of the damage.

#### IMPLEMENTATION

Acquisition of hazard prone areas by the state could be achieved using existing capital outlay funds, Coastal Zone Management funds, or the Land and Water Conservation Fund of the Bureau of Outdoor Recreation, provided substantial recreational benefits can be derived. The propensity for hazards would thus be considered as only one of many criteria under existing point system selection processes. (As noted below, two other federal sources may in the future place greater emphasis on hazard protection alone and thus increase the availability of funds for purchase of hazard prone areas). The selection system which is used to allocate state Self-Help funds to communities who can meet the matching requirements weights ecological and other natural values more heavily, thereby providing greater flexibility in receiving funding for acquiring hazard prone areas. Use of this fund may therefore be most appropriate to local acquisition of hazard prone areas.

--Land and Water Conservation Fund, Bureau of Outdoor Recreation, Department of the Interior - This Act provides funding for acquisition of lands for recreational use through allocation to the state Department of Environmental Management or to towns via reimbursement through Conservation Services. Since projects are evaluated on a point system emphasizing recreational need, only hazard prone areas that can provide and sustain substantial recreation benefits should be considered for funding under this authorization.

--Coastal Zone Management Act Amendments, 1976, Section 315 - During the implementation phase of the CZM program, CZM will have access to federal funds for the purchase of recreation lands in the coastal zone. CZM will ensure that, in addition to assigning priorities on the basis of potential recreation benefits, priority is given to areas that meet the criteria stated above. (See Recreation section.)

--National Flood Insurance Act, Section 1362 - In the event that it would be clearly in the interest of the public's safety to acquire damage prone areas, the federal government is empowered to purchase areas substantially damaged by storms. Once purchased, the property would then be deeded to the Commonwealth or the locality within which it is located, who would then have the responsibility for determining appropriate public use of it. To date, funding for such purpose has not

been appropriated by the federal government, nor have regulations for administering Section 1362 been promulgated. However, this authority may provide a very effective tool for acquiring damage prone areas in the future.

--Self-Help Funds - Matching funds from the Commonwealth are available to local conservation commissions for the purchase of conservation land, such as floodplains. CZM will work with Conservation Services, the administering agency, to ensure that propensity for coastal hazards is given major consideration in the selection of recipients for disbursement of funds.

Policy (11) Provide funding and technical assistance for the restoration and stabilization of foreshore and shore areas in hazardous zones using non-structural measures.

In areas where natural sand dunes and beaches have been severely damaged through unwise development practices or uncontrolled use, restoration and stabilization measures such as dune rebuilding, stabilization of dunes by vegetation planting, and artificial beach nourishment should be considered. These measures are generally substantially less expensive than structural measures, and if implemented properly can closely simulate the effects of natural conditions.<sup>16</sup>

The costs of implementing beach nourishment programs can be high, particularly when sand must be transported considerable distances to the nourishment site, and when the sand supply contributed by littoral and aeolian (wind) processes will be inadequate to prevent the need for frequent periodic re-nourishment.

Minimum criteria for implementing any of these types of measures through either federal, state, or local action should include:

1. the existence of adequate land use regulation or access controls to prevent deterioration of restored or stabilized areas; and
2. the establishment of adequate design criteria to ensure proper height, slope, width, and sand grain size of restored dune and beaches; and
3. the assurance that future maintenance and replenishment requirements have been estimated and can be provided for.

#### IMPLEMENTATION

Non-structural measures can be supported through various federal and state programs as outlined below:

--Corps of Engineers Beach Nourishment Projects - The Corps is authorized to undertake beach nourishment projects in publicly owned recreation areas. CZM will solicit such projects where they are deemed economically feasible and where adequate sources of sand are available.

--Soil Conservation Service Erosion Control Projects - SCS provides technical and financial assistance through local conservation districts and the Pilgrim Area Resource Conservation and Development Project (PL 87-703) for upland erosion control, vegetation planting, and minor structural measures (less than 3 feet in height above mean high tide). CZM will work with local conservation commission and communities to secure assistance from SCS in implementing these types of measures.

--Waterways Program (MGLA Ch. 91, S.11-13) - Is empowered to undertake the "improvement, development, maintenance, and protection" of foreshores and shores. While this authority has primarily been used to fund structural engineering works, sufficient flexibility exists to provide funding for beach and dune restoration and stabilization measures in Special Assistance Development Areas if there is clear public benefit to be gained. CZM will work with the Division to explore the feasibility of using this authorization accordingly.

--CZM Beach Grass Nursery - With the assistance of the SCS Pilgrim Area RC&D Program, CZM has helped to establish a beach grass nursery at Myles Standish State Forest. Plants from this nursery will be made available to the Department of Environmental Management for the restoration of dune and beach areas managed by DEM.

- Policy (12) a. Implement federal or state structural solutions to protect property and lives only when there will be widespread public benefits and minimal adverse environmental effects.
- b. Approve permits for private flood or erosion control projects only when it has been determined that there will be no adverse effects on adjacent properties or down coast areas.

Policy (12a) should be implemented only when the following criteria are met:

1. Non-structural measures, such as acquisition, relocation, land use regulation, flood proofing, and dune/beach restoration or stabilization have been evaluated and rejected as being cost prohibitive, ineffective, or legally infeasible.
2. The area to be protected is of greater than local significance and substantial public benefit in the form of protection of existing public facilities or development of improved public access and expanded public use opportunities can be achieved in conjunction with construction of the proposed project.
3. Implementation of structural measures will not seriously impair the functioning of natural processes, nor adversely affect adjacent or down coast areas.

4. Maintenance costs have been estimated for the project and included in the cost/benefit evaluations. Agreements have been reached with recipient communities concerning maintenance responsibilities.

#### IMPLEMENTATION

Implementation of structural solutions is probably most appropriate to urban areas where natural buffering functions have been irrevocably destroyed, where existing public lands are threatened, where flood proofing of intensive development would be cost prohibitive and/or ineffective, and where commercial and industrial activities are dependent on proximity to the waterfront. Structural solutions are most inappropriate to areas characterized by very dynamic conditions such as barrier beaches, and should not be implemented except where extreme circumstances mandate otherwise.

--Wetlands Program (MGLA Ch. 131, S. 40) - Private or municipal shoreline protection projects are reviewed by conservation commissions pursuant to the provisions of this Act. The commissions are authorized to condition (regulate or prohibit) projects in order to protect the interests of the Act, which include flood control, storm damage prevention, and protection of fisheries and land containing shellfish. Shoreline protection projects which would violate these interests by negatively impacting adjacent or downcoast areas will be conditioned accordingly. As noted in Policies (1), (2), and (8), regulations for this program are being revised to provide uniform criteria for evaluation of proposed projects.

--U.S. Army Corps of Engineers (P.L. 727 as amended) - The Corps is authorized to build structural projects for beach erosion control through specific project approval by Congress or through continuing authorities established by Congress, depending on the level of expenditures involved. For projects meeting the criteria above, CZM will work with the Corps of Engineers to seek necessary appropriations and ensure consistency with CZM hazard area management goals.

--Waterways Program (MGLA Ch. 91) - Authorizes the Waterways Program to undertake construction of erosion control projects. CZM and the Waterways Program are developing a new project evaluation system, consistent with the criteria specified above. This system will be formalized through a Memorandum of Understanding between the agencies which will enable both CZM's and Waterways' concerns to be accommodated in selecting projects for implementation.

As noted in Policy (8) Section 14 authorizes the Waterways Program to license all structures constructed below mean high water line along the Massachusetts coast. CZM will assist DEQE in drafting regulations for the Waterways Program specifying that project approval be contingent on evaluation of adverse effects on adjacent or downcoast areas.

--Coastal Zone Management Act Amendments, 1976, Section 310 - CZM will support a major study to identify sources, characteristics,

and depositional areas of the sediment load transported by littoral processes off the Massachusetts coast. Results from this study would aid in evaluation of effects on downcoast areas and in locating sources of sediment for replenishment of eroded lands.

--CZM will also support research and demonstration of technological advances which provide alternatives to existing structural measures typically used in current practice. Floating breakwaters, for example, can be used to provide protection from wave impacts without obstructing subsurface sediment flow. In this regard, the Corps of Engineers is currently preparing a study for CZM of the effectiveness and environmental impacts of protective structures built by them in prior years at various sites along the coast.

#### TECHNICAL NOTES AND SOURCES

1. "Hurricane Tidal Flood Damages," United States Army Corps of Engineers, New England Division, damage estimates inflated to 1964 price levels.
2. New England River Basins Commission, Report of the Southeastern New England Study, December, 1975.
3. "Cumulative State Report," March 31, 1976, N.F.I.A., Department of Housing and Urban Development.
4. Water Resources Council, Draft Report, "A Unified National Program for Flood Plain Management," June, 1975.
5. Source of data and definition: Joseph Jockimovicz, Division of Mineral Resources, "Massachusetts Coastline Condition", 1971. (Includes data developed by the North Atlantic Division of the Corps of Engineers in "The National Shoreline Study - North Atlantic Region", New York, 1970.)
6. The authority of the Corps of Engineers is limited to construction of protective measures only where there is clear public benefit, the MDC initiates erosion control projects with both the Corps and Waterways for protection of MDC owned and operated beaches; and the Division of Waterways funds 50% of construction costs for protective structures requested by communities. Projects costing less than \$15,000 are commonly undertaken by private landowners and require permits from the Division of Waterways.
7. No specific scientific studies concerning the effectiveness of engineering works constructed along the Massachusetts coast have been conducted to date. However, in a recent report to the Congress "National Efforts to Preserve the Nation's Beaches and Shorelines -- A Continuing Problem," June, 1977, the U.S. Army Corps of Engineers pointed out that their nationwide survey revealed that "in many cases where substantial and costly erosion control projects had been completed, they did not prove to be permanent solutions and continuing and costly project efforts were necessary to combat erosion." The report also concluded: although seawalls and bulkheads protect property behind them, "they often accelerate erosion on the ocean side" by concentrating wave energy on the bases of the structures where they meet the beach. A 1973 report, Guidelines for Long Island Coastal Management, by the Regional Marine Resources Council of the Nassau-Suffolk Regional Planning Board on Long Island, New York stated that development practices and "...shore protection structures have created a situation where the natural rate of erosion affecting both beaches and marshes has been increased." Adverse effects on downcoast areas caused by groin and jetty construction are also documented by Gary Sourcie in a January, 1974 Audubon article, "Here Today, Gone Tomorrow," (Vol. 76, No. 1, pp. 71-93).



8. Structures built and maintained by the Corps generally have a useful life of 50 years, while state projects typically have a useful life of 10-12 years.
9. Historical data is primarily used for delineating the 100 year flood elevation in the coastal towns. Application of computer modeling methods to predict flooding levels and wave run up effects in complex embayments is currently being evaluated by HUD, the Corps of Engineers, and other agencies and private firms involved in rate mapping process.
10. Encouragement of development in hazardous areas as a result of implementation of the National Flood Insurance Program was recently the focus of a symposium sponsored by the New England River Basins Commission. See The Ocean's Reach, Boston: New England River Basins Commission, February, 1976. A recent report sponsored by the Open Space Institute and Natural Resources Defense Council: "The Status of the Barrier Islands of the Southeast Coast," Longden Warner, May, 1976, also suggests that public funds are in fact providing a stimulus to "rapid and destructive development" of the barrier islands fringing the Southeast coast of the United States.
11. From the Committee report on P.L. 930251, House Report 93-541.
12. Acquisition of natural valley storage areas in the Charles River basin is currently being funded under Section 1 of the Water Resources Development Act of 1974.
13. Final Regulations, Title 24, Chapter X, Subchapter B, Part 1910, "Criteria for Minimum Land Management and Use," Federal Register, Vol. 41, No. 207, October 26, 1976. With regard to barrier islands, Robert Hunter, acting administrator of the Federal Insurance Administration, has declared, "FIA strongly discourages any development on barrier islands because of the significant dangers to life and property from flooding that is present there."
14. United States Water Resources Commission, Draft Report, A Unified National Program for Flood Plain Management, June, 1975.
15. Two recent EPA studies have documented this relationship: EPA, "Secondary Impacts of Transportation and Wastewater Investments: Review and Bibliography," January, 1975 and EPA, "Secondary Impacts of Transportation and Wastewater Investments: Research Results," July, 1975.
16. Dune stabilization and beach nourishment programs have in some cases been found to adversely affect natural buffering functions. See Godfrey and Godfrey, "Comparison of Ecological and Geomorphic Interactions Between Altered and Unaltered Barrier Island Systems in North Carolina," and Dolan, "Barrier Islands: Natural and Controlled" in Coastal Geomorphology ed. by Donald Coates, Binghamton, New York, State University of New York, 1972.



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## Visual Environment

## VISUAL ENVIRONMENT

### SUMMARY OF FINDINGS

From July 11 to July 15, 1976, 1.5 million people became aware that Boston had a waterfront. They also experienced the inaccessibility of the waterfront--to view the tall ships of Operation Sail, most people were forced to cram together in a few isolated corners of abandoned piers, vie for window spaces in high rise luxury apartment buildings, or pay fifteen to forty dollars for a ride on a harbor cruise ship.

The point: very little access to the scenic aspects of the coastal zone exists in the Boston Metropolitan Region, a situation paralleled in many other areas along the Massachusetts coast where the public's desire to enjoy the visual amenities of the coastal zone has been pre-empted by other values.

Of the many issues which concern Massachusetts Coastal Zone Management, protection of scenic values and opportunities is perhaps the least tangible. This does not mean, however, that management of visual quality should be ignored, especially since any alteration in the coastal zone will naturally have visual impacts. Whether these impacts are, in balance, beneficial, or adverse, depends in large part upon deliberate planning and management to make desired impacts actually happen. It is, therefore, essential that a comprehensive management program for the Massachusetts coastal zone include a visually-oriented element.

In contrast to other management decisions affecting the coastal zone for which quantifiable data can be used to determine levels of acceptability, resolution of visually related issues must often rely on qualitative values and judgements. Recent research, however, indicates that some degree of consensus exists in terms of the landscape qualities that people perceive to be visually appealing. There appears to be general agreement that visual quality is strongly linked to the level of complexity of the viewed scene--harmony of visual elements is desired, but there must be sufficient variety for the scene to be interesting and not monotonous. The presence of water, as well as movement (two characteristics common to coastal views), have also been found to enhance preferences for visual quality. Further, naturalistic landscapes are generally preferred over man-dominated ones--physical modification of natural waterfront configurations, visual evidence of pollution or other forms of human intervention are undesirable qualities.<sup>1</sup>

These results suggest, as one would expect, that coastal landscapes which offer views of the water, a cohesive variety of natural elements, contrasting changes in topographic relief and interesting vegetational patterns, and are relatively free from disturbance by man's activities will be the most valued by local residents and visitors alike. Identification of significant coastal scenic resources by CZM, as well as recommendations for subsequent management,

have been guided by these findings, and by values placed on scenic resources through the citizen advisory process.

On the state level, two basic concerns of Coastal Zone Management will be to increase visual access opportunities for the general public, especially in the more developed and urbanized areas, and to ensure that publicly-funded facilities which are sited within the coastal viewshed are designed to be visually compatible with natural coastal characteristics and features of historical or cultural importance.

Management of visual resources will require considerable input and implementation at the local level. Uses such as housing, for example, which are responsible for significant impairment of visual access, can best be regulated through community zoning. "Townscape" qualities and significant historical or cultural assets can be protected through designation of historic districts and sites or by means of other local controls.

While natural features and man-made features of historical, archaeological, architectural, or cultural significance provide the coast with its greatest visual assets, coastal dependent activities, such as commercial shipping and fishing are also important integral elements of the visual environment of the coastal zone.<sup>2</sup> Their facilities and operations need not always be viewed as eyesores. If access to them is carefully designed, they can provide interesting visual and educational opportunities. Further, views of urban harbor areas can be increased if physical access to the waterfront is provided around facility perimeters.

Finally, management of visual resources may in some instances require application on a "corridor" basis, since both natural and man-made elements will be viewed as a continuous set of images along major transportation and recreation networks.

#### THE COASTAL VIEWSHED

Views of unique scenic attributes of the coastal zone, whether natural or man-made, are constrained by intervening topographic features, vegetation, or man-made elements. Natural ridges, dense stands of trees and understory shrubs, and man-made structures and facilities will block both views to the shoreline and water and views of the coastal landscape from the water. Typically the inland boundary of these views will be the first major ridge line or change in topographic relief (see diagram below).

When natural vegetation or man-made structures obstruct views within this zone, the visual boundary, or "viewshed" limit is moved toward the water (see diagram below). The latter condition defines the existing viewshed, the former, the potential viewshed within which vistas of the coastline could be created through, for example, imaginative site planning, or the removal or modification of obstructing buildings and facilities. It is within these boundaries that management

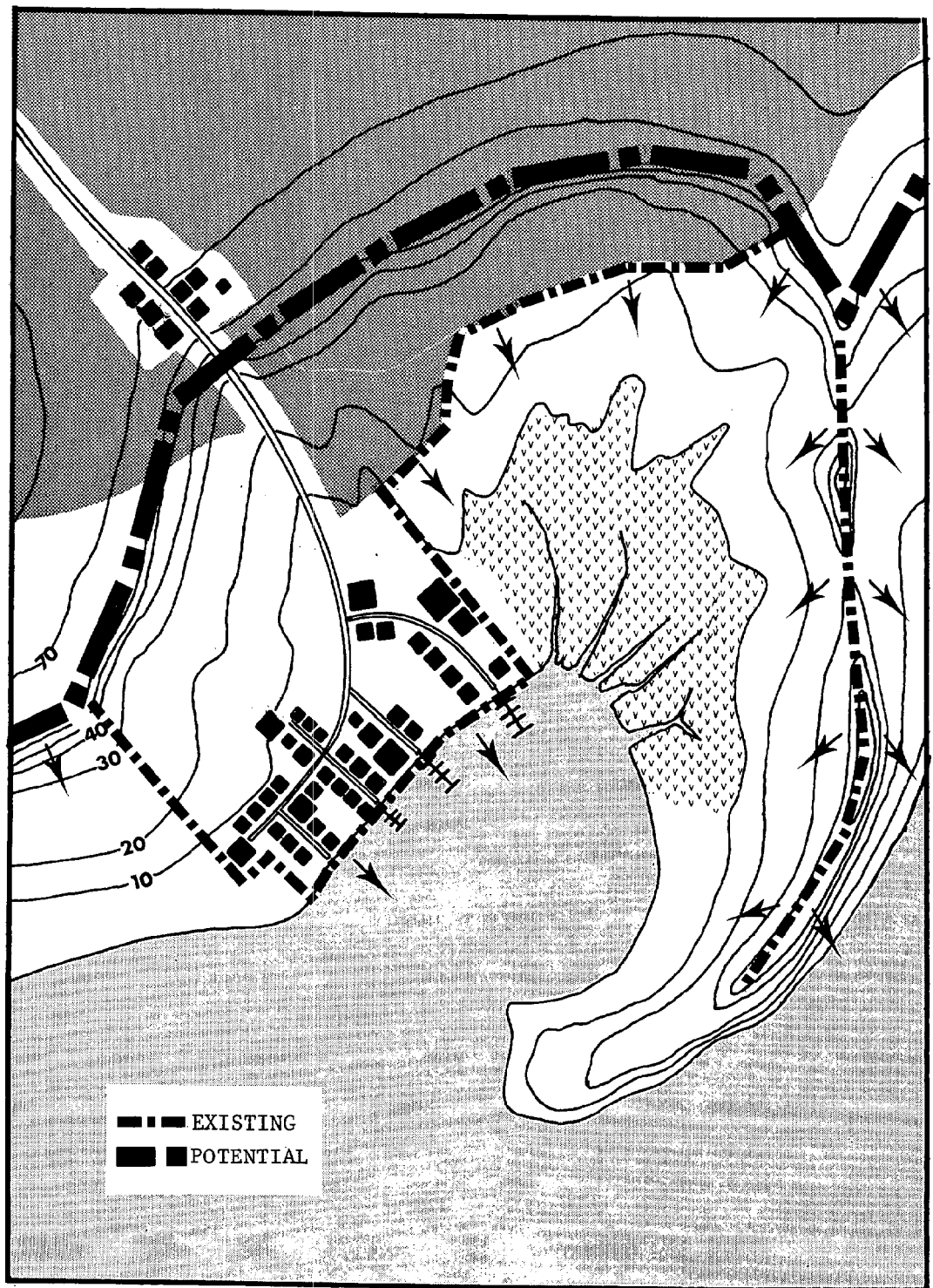


Figure  
Coastal Viewsheds

of coastal scenic and visual resources will be most relevant. Also of concern to CZM are elevated positions outside of the viewshed, such as hilltops or observation towers, since they may be visible from locations within the viewshed.

An approximation of the relative abundance of visual access to the shoreline is given in the chart below. The bar graphs display the ratio of acres of undeveloped land with existing or potential views to each mile of shoreline in the coastal regions, excluding the Boston urban area. As would be expected, the amount of visual access is generally less in the more densely developed areas, e.g., the Lower North Shore and the South Shore. This type of analysis was not possible in the Boston Metropolitan area due to the difficulty in constructing an accurate viewshed in a heavily developed area. Obviously, however, such a graphical depiction for Boston city proper would show a limited amount of undeveloped land across which views of the shoreline would be possible, although views of the harbor are available from many of the taller office and residential structures.

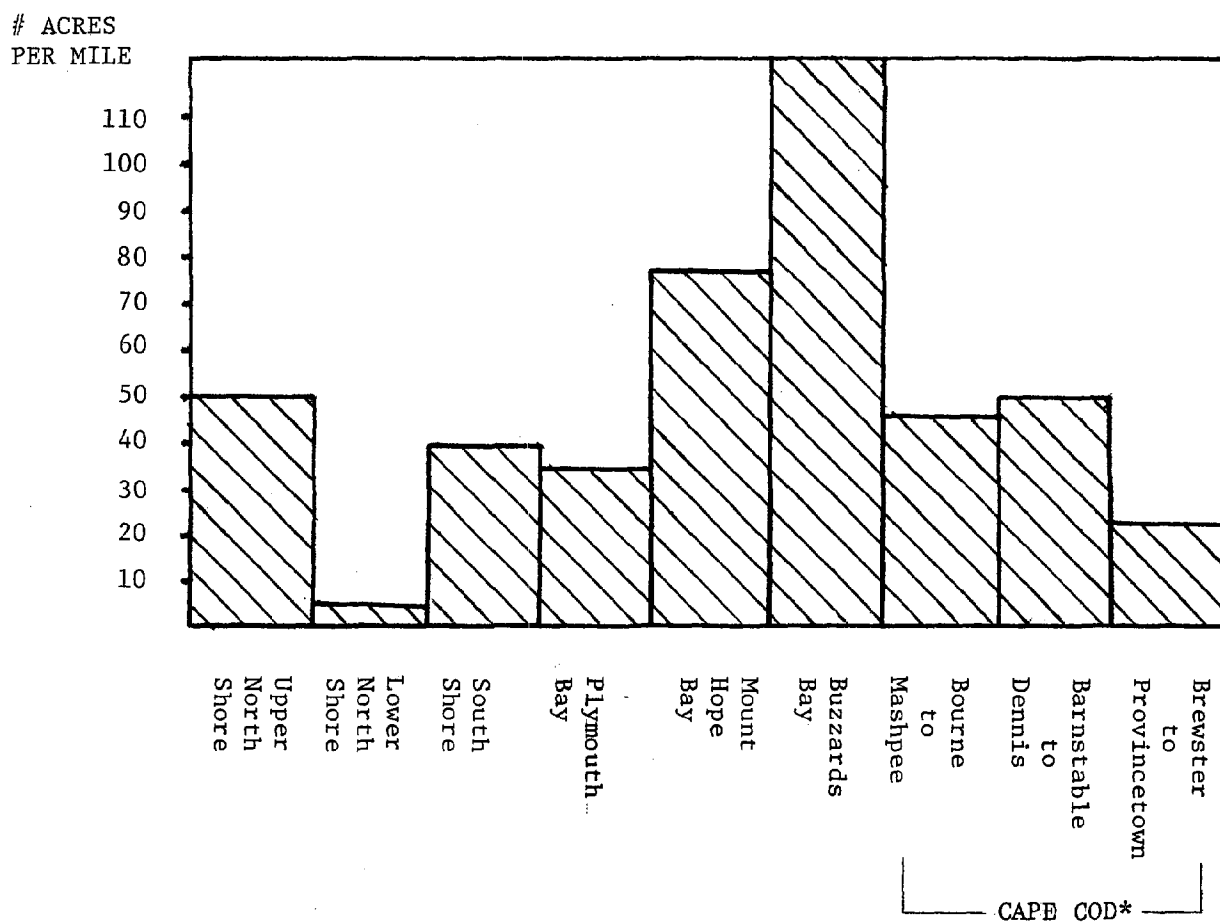
Within the coastal viewshed, natural and man-made visual elements may be either of a point (e.g., Boston Light), areal (e.g., Barnstable Marsh), or linear nature (e.g., the North River). In the following sections, visual attributes of point and areal features of natural, historical, architectural, or cultural significance are discussed, as well as impacts of contemporary human activities. Linear elements are then discussed in terms of their importance as visual corridors within the coastal zone.

#### VISUAL ATTRIBUTES OF NATURAL COASTAL FEATURES

Within the coastal viewshed, the wide variety of natural elements provide a great diversity of scenic attributes unique to the coastal zone. Individual perceptions of the visual quality of these features may vary considerably and may be greatly tempered by the psychological disposition and cultural background of the observer (e.g., their mood, educational background, geographical origin, etc.) as well as by other aesthetic or preference factors (e.g., odor, smell or suitability of the viewed area for recreational activity). For example, a salt marsh may be viewed as a pleasing, tranquil coastal scene by an infrequent visitor to the coastal zone, while the same marsh may be seen as an aesthetic nuisance by a local resident because of its odor or because a channel must be periodically dredged through it for recreational boat access.

Generally speaking, however, the research findings discussed earlier and the fact that a great number of Massachusetts residents flock to coastal areas in the summertime would seem to indicate that most coastal features are deemed visually appealing. Visual attributes of specific coastal environment types which contribute to their attractiveness are highlighted below:<sup>3</sup>

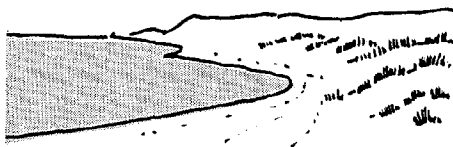
# RELATIVE AMOUNTS OF UNDEVELOPED LAND WITHIN REGIONAL POTENTIAL VIEWSHEDS



\* Figures do not include National Seashore.

## Coastal Environment

### Beaches and Sand Dunes



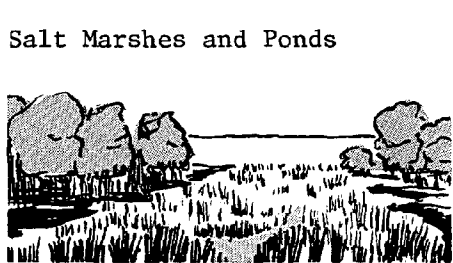
### Bluffs and Rocky Shores



### Points, Spits, Bars, Islands



### Tidal Flats



### Coves and Embayments



## Scenic Attributes

- \* sense of infinite space, immense scale and rhythmic motion
- \* soft, rolling forms, accentuated by the lack of tall vegetation
- \* effects of wind and salt spray visibly evident in natural vegetation patterns
- \* high visibility of natural dynamic forces at work, constantly changing the face of land forms
- \* appearance of great size and height when undeveloped
- \* strong visual contrast between vertical headlands and horizontal beach
- \* effects of wind and salt spray visibly evident in natural vegetation patterns on bluff crests
- \* dramatic sense of visual contrast conveyed by narrow landforms against open expanses of water
- \* focal points add variety and interest to coastal views provide a point of reference to boaters
- \* visual evidence of marine life patterns during periods of low tide
- \* tranquil, open expanses of views to the water and interior areas framed by surrounding vegetation
- \* interesting visual contrasts along marsh edges
- \* visual evidence of the natural order of marine life
- \* uniform, muted colors
- \* sense of enclosure and of protection from natural forces (wind, waves, etc.)
- \* visual evidence of marine life patterns when viewed from elevated observer positions--changing colors, depths, and bottom conditions
- \* unseen elements provide sense of tranquil mystery and serenity



Estuaries and Lower River  
Reaches and Mouths



Flat Lands and Coastal  
Plains

- \* strong visual evidence of natural dynamic forces--tides, fresh water flow, etc.
  - \* strong sense of enclosure and protection
  - \* visual evidence of changing patterns of marine life
  - \* visual access to inland areas
- 
- \* interspersed views of water and shoreline framed by vegetation and natural topographic relief
  - \* dense, low, uniform vegetation patterns visible in tiers perpendicular to the coast

MAN-MADE FEATURES OF HISTORICAL, ARCHITECTURAL,  
OR CULTURAL IMPORTANCE

The Massachusetts coastal zone is dotted with a number of man-made features of historical, architectural, archeological or cultural significance that are as important to the visual quality of the coastal zone as the natural features discussed above. In an age characterized by the visual dominance of the automobile, proliferation of nationally standardized fast-food services, and general "plasticization" of the landscape, the real "sense of place" offered by many of the Massachusetts coastal communities, e.g., Marblehead, Rockport, Provincetown, and Nantucket, stands in vivid contrast. "Townscapes" such as these, as well as individual historic sites, such as Boston Naval Shipyard and Salem Maritime National Historic Site, or historic districts, such as Newburyport's Market Square and New Bedford's Fort Tabor, are important because of their visual continuity with the past, their harmony with natural coastal features, the pedestrian scale of the access they provide to the water and its activities, and because of their distinct ethnic or cultural characteristics. With their linkage to the past and their architectural beauty, they provide a diversity of special neighborhoods and places off the beaten path of contemporary society. Additionally, these types of man-made developments are typically major focal points for tourism and catalysts for urban redevelopment (e.g., Boston, Newburyport, and Salem), thus contributing substantially to the economic viability of the coastal zone.

Archeological resources provide evidence of the historical settlement of the Massachusetts coastal zone. For example, Plimouth Plantation provides an outstanding educational opportunity relating to Massachusetts European heritage.

Many of these historic sites and districts have been placed on the National Register of Historic Places. In addition, in order to preserve the historic features of certain townscapes, the Massachusetts Legislature and coastal communities have established historic districts in the coastal zone. Both these National Register sites

and state and locally designated districts are shown on the Regional Chapter maps. The districts include:

Historic Districts Established by Coastal Communities

Beverly:	Fish Flake Hill Historic District
Dennis:	South Dennis Historic District
Harwich:	Harwich Historic District
Manchester:	Manchester Historic District
New Bedford:	Waterfront Historic District
Plymouth:	Town Brooke, Town Square Historic District
Salem:	Derby Street Historic District
Sandwich:	Sandwich Historic District
Tisbury:	William Street Historic District
Wareham:	Parker Mills Historic District
Westport:	Westport Point Historic District

Historic Districts Established by Special Acts of  
Massachusetts Legislature

Falmouth:	Falmouth Historic Districts (7 areas)
Hingham:	Lincoln Historic District
Marblehead:	Old Town Historic District Ginger Bread Hill Historic District
Nantucket:	Nantucket Historic District (entire island)
Yarmouth:	Historic Yarmouthport Historic District

CONTEMPORARY DEVELOPMENT IMPACTS AND VISUAL ACCESS

Coastal scenic resources are acutely vulnerable to human activities and development. Through development of facilities and structures that either obstruct views or are visually unrelated to the coast, the scenic quality of the Massachusetts coastal zone has been and will continue to be seriously degraded. Conversely, balanced development of coastally dependent uses in selected areas along the coast would provide a wide diversity of visual experiences, as well as opportunities for the public's interaction with such commercial activities as fishing, maritime shipping, energy production, shipbuilding and recreational boat building, repair and storage.

Marine Terminals and Energy Facilities: Because of operational requirements which typically necessitate the use of flat, open, waterfront land, shipping and energy related facilities can be the most visually intruding facilities along the coast. Huge loading cranes, bulkheads, warehouses, exhaust stacks, cooling towers, transmission lines, and tank farms can drastically block visual access and alter the visual impact of natural coastal features. Given their immense scale and industrial nature, however, it is unrealistic to propose that the larger facility components be screened or blended into the coastal landscape. Another approach would be to recognize that these facilities are integral elements of the coastal "scene"--their appearance and design reflects their functional relationship to the coast.

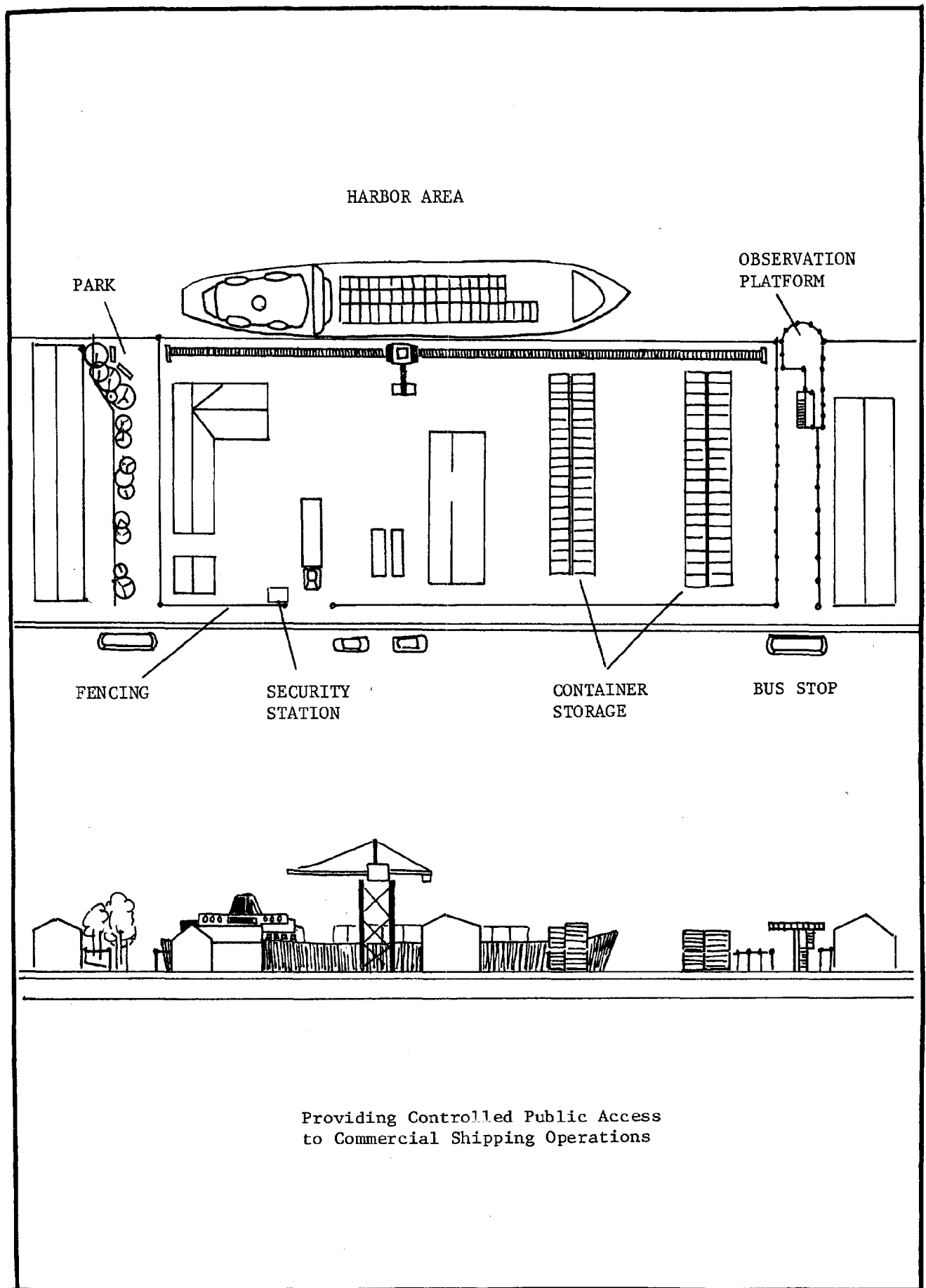


Figure 3 141

Therefore, opportunities for visual access to them should be utilized. While views of harbors and natural features can be maintained through simple alignment of facilities perpendicular to the coast in the traditional wharf style, immense educational opportunities could be afforded to viewers of the facilities themselves. Through use of guided tours on overhead walkways or provision of observation platforms, viewers could observe berthing, loading, shipbuilding and repair, energy production, and pollution control operations. Naturally, visual access will be constrained by factors limiting physical access--safety, security, maintenance, production efficiency, and cost. Additionally, ancillary components, such as oil storage tanks, could be sited inland where natural land forms and vegetation can be used for screening, or they can be designed with imaginative exteriors (e.g., the "CORITA" gas tank in Dorchester).

Commercial Fishing Facilities: Commercial fishing facilities for berthing, handling, and processing operations represent another human use of the coast that can provide a rich diversity of visually contrasting and exciting elements. Unlike industrial uses, commercial fishing piers are generally perceived to enhance the seafaring image of coastal communities, and in some areas, may generate considerable tourist interest. However, views of these activities may be partially or totally obstructed by the presence of processing plants which may or may not be waterfront dependent (see Ports and Harbors section). To compensate for losses in direct visual access to the shoreline and open expanses of water, access to interesting aspects of facility interiors and operations could be provided, as well as to the shoreline along facility exteriors. Non-waterfront-dependent facilities should be located inland, where feasible.

Housing: Of the development types which constrain visual access along the Massachusetts coast, housing is by far the dominant activity--90% of all developed land in the Massachusetts coastal zone is consumed by housing. Since lot sizes are generally decreasing from one acre to 1/4 or 1/2 acre plots, opportunities for visual access between structures across expanses of open space are becoming scarcer. Additionally, because residential activities are traditionally private, there is little of the visual interest and stimulation associated with port and fishing activities, except where historical or exceptional housing design exists and is open to view. In urban areas, however, the amenities associated with waterfront living may be essential to housing revitalization and the survival of downtown areas. Zoning and other land use controls can be used to maintain visual access to the coast in residential areas. Further, selective clearing of vegetation to provide views of the shoreline from inland sites within the viewshed could provide housing sites as equally appealing as waterfront locations and would minimize obstruction of visual access along the shoreline.

Recreation and Tourism: Extensive opportunities for visual access to natural amenities and sites of historic, architectural, or cultural significance, are generally associated with recreation and tourism development. Cycling and hiking trails can provide physical access to scenic areas undisturbed by the visual dominance of the automobile,

and boaters can gain exposure to coastal and riverine views inaccessible by other modes of travel. Unfortunately, the visual blight of strip development typically accompanies these uses, as do visually degrading parking and access facilities. To the extent that these ancillary facilities can be set back and screened with earth forms and vegetation without diminishing their utility, adverse impacts can be alleviated. Regulatory and zoning controls, such as sign ordinances can also be used to prevent the visual blight associated with strip development.

Public Service Systems: As growth inducers, transportation networks and utilities significantly affect the visual environment of the coastal zone. Subdivision patterns based on geometric utility and road layouts rather than concern for natural site characteristics may diminish opportunities for visual access. The visual appearance of natural features is also degraded when extensive clearing and regrading is done. Roads and rail corridors constructed parallel to and in close proximity to the shore restrict visual access from viewing points landward of the facilities. Similarly, these facilities restrict views of the coast from the water. On the other hand, properly designed roads with alignments and scenic overlooks that allow the traveler to sense the rhythm of the landscape, as well as view distant elements, offer innumerable visual and sensory experiences for the traveler.

Shoreline Protection Projects: Construction of coastal engineering works introduces materials and geometric forms that are sometimes inconsistent with natural shoreline configurations and elements. Obviously, protection of life and property will outweigh concern for visual quality in areas where these types of facilities can be justified. However, these structures should be designed to reflect natural forms and textures and provide as much visual access as possible. For example, use of rip-rap rather than poured concrete and steel, terracing of dikes and seawalls, and the use of salt tolerant vegetation plantings can help to minimize their impact.

Agriculture: Among all the human activities that take place in the coastal zone, agriculture typically provides the most opportunities for visual access; e.g., across cranberry bogs and salt marsh hayfields. Agricultural components of the rural landscape provide considerable visual diversity when interspersed between urban areas. Unfortunately, consumption of agricultural land for housing and other uses remains prevalent. To the extent that the Agricultural Assessment Act and other incentives reduce pressure for the sale of farm land to developers, the visual assets of maintaining agricultural uses of coastal lands can be conserved.

### VISUAL CORRIDORS

Each of the scenic features and contemporary activities discussed above will have positive or negative visual impacts when seen from specific viewing points within the viewshed or from elevated observer

positions landward of the viewshed boundary. As motorists, rail passengers, cyclists, hikers, and boaters traverse the coastal viewshed, they will also experience these visual impacts sequentially. Contrasting development patterns, varying from sparsely settled agricultural areas to dense urban regions, will convey visual images that will vary with the speed of the traveler and the exposure of both natural and man-made elements to view. The design of a road or trail right-of-way, or the complexity of a river's course, will compliment visual quality to the degree that the motion or rhythm of the landscape can be felt while travelling along the corridor. Additionally, views of the everyday or commonplace landscape will be important for the contrasts they provide to more unique and dramatic scenic features.

Therefore, protecting visual quality along these visual corridors, as well as at individual sites or point elements, will be relevant to management of coastal zone scenic resources. Specific corridors with outstanding visual attributes may merit designation as special "scenic corridors." If land use and development can be controlled within them or imaginative opportunities for visual access can be provided, scenic quality can be preserved for the benefit of the traveler or recreationist who enjoys the experience of "getting there" as well as "being there."

Of additional concern to the management of visual corridors is the control of billboards and other forms of outdoor advertising. Since they are designed to attract the eyes of travelers, they obviously will have significant visual impact and typically will detract from natural scenic values. Complete prohibition of billboard advertising, whether on-site or off-site, is unrealistic--the information provided to travelers concerning services is for the most part necessary. However, in areas where natural scenic quality might be seriously impaired by billboards and other forms of advertising, it may be necessary to restrict or completely prohibit their usage.

## OBJECTIVES

The foregoing discussion suggests that a management program for the coast's visual environment should be designated to achieve the following objectives:

1. To preserve, enhance, and restore the integrity of the coastal zone as a visual unit with unique sensitivities and opportunities;
2. To increase opportunities for visual access to natural and man-made scenic features and contemporary waterfront activities;
3. To ensure that the siting and design of major facilities will be compatible with the inherent visual qualities of the coastal zone;
4. To assist in improving compatibility between small scale development and local visual character; and
5. To facilitate private investment in waterfront redevelopment through public investment in visual amenities.

## CZM POLICIES AND PROGRAM RECOMMENDATIONS

Policy (13) Encourage incorporation of visual concerns into the early stages of the planning and design of all facilities proposed for siting in the coastal zone. Use existing review processes to ensure that publicly funded development minimizes adverse impacts on the visual environment.

CZM believes that questions relating to the visual impacts of proposed developments are primarily of local concern, and can best be resolved through local management mechanisms such as zoning or design review by an established board, with the exception of certain designation powers granted to the state (see Policy 16). However, CZM will utilize existing review processes, as well as advance coordination with funding agencies, to ensure that the following types of projects will not adversely impact visual access or quality:

1. federally or state owned facilities whose construction will be financed completely by federal or state funds (e.g., a Coast Guard facility).
2. public facilities whose construction will be financed in part by federal or state funds (e.g., a sewage treatment plant).

3. major developments in APR's which require federal permits (e.g., a radio tower proposed for construction in a tidal water body or salt marsh).

Private projects other than those requiring federal permits in APR's will not be subject to CZM review of their aesthetic implications unless it has been determined by the Executive Office of Environmental Affairs that their potential cumulative impacts necessitate preparation of a full Environmental Impact Report. In such instances, CZM will assist in reviewing potential visual impacts and in recommending mitigating measures.

Because of their intangibility and supposed insignificance relative to other economic and environmental concerns, visual impact considerations are often overlooked or left to the last in the planning and design of both private and public development. In order to facilitate the voluntary incorporation of design measures for minimizing adverse effects on visual access and existing scenic attributes at an early stage in the planning and design of proposed facilities, CZM will develop and distribute a conceptual guideline handbook. Basic concerns to be addressed in this handbook will include, for example:

1. recommendations on facility siting and design for specific coastal visual environment types
2. measures to minimize impairment of visual access or to enhance visual access through physical access provisions
3. measures to blend facilities with existing topography, vegetation, and other scenic qualities
4. legal and institutional measures available to communities to maintain visual access and quality
5. methods for evaluating potential visual impacts and identifying affected viewing populations.

As a prelude to development of such a handbook, general guidelines are presented below for the coastal environment types most likely to be subjected to intensive development:

Sand Dunes\*:

Structures should be limited in height and setback behind primary dune ridges to avoid interruption of the visual forms of rolling dune ridges or impairment of views to the water. Residential units should be clustered in vegetated areas, and road construction should minimize cutting and filling of natural topography. Only indigenous vegetation should be planted.

\*NOTE: These recommendations relate only to visual concerns and as such do not reflect ecological considerations for facility siting and design.



Points, Spits,  
Islands:

Structures should be limited in height to avoid disruption of the silhouettes of natural promontories (except for lighthouses and other navigation aids). Construction materials should blend with indigenous colors, textures, and forms.

Coastal Plains  
and Flat Lands:

Development should be clustered in vegetated areas set back from the shoreline, and mixed with open expanses of agricultural or undeveloped land. Topographic features should be used to screen development and ancillary facilities such as roads and parking lots. Development densities should vary, with occasional changes in building heights and mass to provide interest.

Developed Harbors  
and Embayments:

Boating facility and marine terminal development should conform to existing shoreline configurations to the maximum extent possible, and building heights should be limited to maintain views of the harbor. Pedestrian physical access should be provided around facility perimeters. "Seafaring" qualities should be maintained and enhanced.

In general, views of natural features and man-made features of historical and cultural importance should not be obstructed or degraded. Where coastally dependent facilities must be sited along the waterfront, views to interesting aspects of facility operations or physical access around facility perimeters to provide views to the water should be provided to compensate for negative visual effects. To the extent possible, construction materials should blend with indigenous colors and textures, or should enhance the visual quality of areas that have been degraded through previous development activity. Cutting and filling of natural topographic features should be minimized, and vegetation planting and complimentary earth forming techniques should be employed to screen unsightly facility components. Alignment of roads and other transportation corridors should conform to existing topography and avoid obstruction of coastal views from interior areas, while maximizing visual opportunities for the traveler. Utility systems should be placed underground.

IMPLEMENTATION

Distribution of the guideline handbook will provide the basic vehicle for facilitating greater consideration of visual concerns in the siting and design of coastal facilities. CZM will also use existing state and federal review procedures to promote conformance with the intent of this policy. Analyses of potential visual impacts of proposed projects falling within the scope of CZM review (as defined above) will focus on the following concerns:

1. Facility Visibility: Using the coastal viewshed delineation or by constructing a "local" viewshed around proposed facility sites, the magnitude of affected viewing populations will be determined (e.g., approximate numbers

Vol I p. 148 change title of #2 to read

"Effects on Significant, Historic, Cultural, Visual and Aesthetic Elements."

Vol. I p. 148 line 39 add:

"The data in this inventory will be updated annually to include new sites placed on the National Register of Historic Places and historic districts designated by the legislature or municipalities."

through identification of how views from key viewing points within and outside of the local viewshed will be obstructed.

4. Compatibility with Existing Visual Character: Structural heights and masses will be assessed in relation to surrounding topographic relief, vegetation, and existing structures. Construction materials will be evaluated for compatibility with indigenous colors and textures. Consideration will be given to innovative design solutions.
5. Other Visual Impacts: Exhaust emissions and other impacting factors will be assessed for their effects on visual quality.

Procedural measures that will be used to conduct visual impact reviews include the following:

--CZM Inventory of Scenic Resources - CZM has established a mapped inventory of scenic resources in the Massachusetts coastal zone which will be expanded and maintained for use by public and private interests considering development in the coastal zone and by CZM in evaluating visual impacts of proposed projects. Included in this inventory are historic, archeological and architectural sites or districts listed in the National Register of Historic Places, including designated or potentially designated National Historic Landmarks; natural areas of scenic importance listed in the Massachusetts Landscape and Natural Areas Survey; and natural areas currently designated or eligible for designation as National Natural Landmarks.\* In addition, since all of the ecologically Significant Resource Areas (SRA's) mapped by CZM have certain inherent visual attributes as noted in the text, CZM will use its inventory of SRA's to supplement the scenic inventory. Preliminary maps identifying visually important sites have been reviewed and updated by the CZM Citizen Advisory Committees. —

--A-95, NEPA, MEPA - CZM will use these review procedures to promote conformance with the above policy to the maximum extent feasible. For major publicly funded facilities, depending on their magnitude and location relative to sensitive scenic resources, CZM staff will elicit the assistance of a design review board composed of experts in the appropriate fields. Evaluation of impacts on historic sites or districts is further detailed in Policy (14).

--Federal Permits for Filling (Federal Water Pollution Control Act of 1972, Section 404) and alterations in Navigable Waters of the United States (River and Harbor Act of 1899, Section 10) - Applicants proposing to discharge dredged or fill material or to build structures within the navigable waters of the United States must receive a permit from the Waterways Program (MGLA Ch. 91, s. 14), prior to approval by the Corps of a Sect. 10 or 404 Permit. The Corps is required to review the aesthetic implications of a proposed project prior to issuance of a permit. For such projects proposed in Areas for Preservation or Restoration, applicants must file an Environmental Assessment Form with the Executive Office of Environmental Affairs. Through review of such notification, CZM will determine if the project would have significant adverse impacts on the visual environment of the APR. If an affirmative determination is made, CZM will use the federal consistency provision of CZMA (Section 307) to ensure that issuance of the federal permit is conditional on design modification to minimize adverse visual effects.

Policy (14) Review developments proposed near designated or registered historic districts or sites to ensure that Federal and state actions and private actions requiring a state permit respect their preservation intent and minimize potential adverse impacts. Encourage use of local zoning, land use controls, and tax incentives to improve visual access and the compatibility of proposed development with existing community character.

Among the legal tools that are applicable to achieving visual and aesthetic goals, the following are the most relevant:

Cluster Zoning: PUD Zoning	Exceptions are granted to developers to aggregate housing units in exchange for providing open space. Overall density of development is maintained, but views to the coast can be provided across open space areas, and siting and design of clustered units can optimize integration of manmade elements with natural topographic and vegetation features.
Transfer Development Rights:	Development rights on one parcel are removed and transferred to a second parcel where more intensive development can take place. Development is limited on the first parcel. Can be used to regulate building heights and densities, providing for a stepped progression from low, sparse development along the shore to denser, higher development inland.
Density Bonus:	More intensive development rights are granted to developers in return for open space or other public amenity provisions. Visual or physical access to the shore can be provided across open space, or on-site recreation benefits can be gained.
Easements:	Development rights are purchased or tax incentives are granted the developer by the town to limit development and provide open space. Visual or physical access to the shoreline can be gained across open space areas.

Performance Zoning:	Stipulations are made as to allowable impacts of particular activities or as to design specifications to which proposed development must conform. Visual character of existing structures and community can be maintained over time.
Historic District Zoning:	Design of exteriors within public view are subject to local planning board or design review board approval. Negative intrusions on visual character of structures of historical significance can be prevented.
Preferential Tax Assessments:	Land used for farming is assessed for property taxes at a lower rate in order to promote continued use of the land for agricultural purposes. Visual access across open farm land and rural character can thus be maintained. Owners of historic properties or lands with conservation value may, through a preservation or conservation restriction, assign to governmental bodies or charitable organizations or trusts their rights to alter the historic or natural character of their property. By thus surrendering a portion of their development rights, owners may receive reduced tax assessments.

Historic districts or sites are designated through:

1. placement on the National Register of Historic Places;
2. creation of historic districts by local governments; and
3. establishment by special acts of the Massachusetts Legislature.

Most local historic districts and those established by special act are already on or are eligible for placement on the National Register, and are thus assured a measure of protection against any potentially damaging effects caused by federally funded or licensed projects. (Designated historic districts or sites are listed on page 140 and shown on the regional maps (Volume II)).

Furthermore, CZM will deem inconsistent with the CZM program any federal development or federally funded or licensed project which, after review and consultation with the Massachusetts Historical Commission, is considered to harm the historic qualities of designated historic districts or sites, or of properties deemed eligible for the National Register by the Massachusetts Historical Commission.

While most potentially damaging state actions would involve federal funding and thus be subject to the above procedures to protect historic districts or sites, CZM will also review state development projects and private actions requiring a state permit proposed near designated historic districts or sites to ensure that state agencies carry out their responsibilities under the Massachusetts Environmental Policy Act to "use all practical means and measures to minimize damage to the environment," including "destruction, damages, or impairment, actual or probable, to .... historic districts or sites."

"Development that does not require state permits or does not involve state funding will not be subject to this review procedure."

In addition to these measures, exterior alterations, demolition, and new construction within historic districts established under MGLA Chapter 40C and within most historic districts established under special legislative acts must receive local historic district commission approval, unless specifically exempted by the community's historic district by-law or ordinance. Such approval is also required for state property within the district, regardless of whether the property was acquired or taken by eminent domain.

#### IMPLEMENTATION

CZM will coordinate its technical assistance program with the Office of Local Assistance of the Department of Community Affairs. Depending on local needs and desires, CZM will provide either funding or legal, planning, and technical expertise to assist in the development of model zoning codes or other forms of visually-related controls (see Program Incentives section, Management Chapter). CZM's proposed guideline handbook mentioned in the previous policy should prove particularly useful in this regard.

--Zoning Enabling Act (Acts of 1975, Chapter 808) - Authorizes local communities to adopt measures such as those listed above. The Massachusetts courts have upheld that aesthetics alone may justify the exercise of the police power within the broad concept of protecting "general welfare."<sup>4</sup> Regional Planning Agencies are also authorized by this act to propose revisions of zoning codes at Town Meeting.

--Farmland Assessment Act (MGLA, Chapter 61a) - This act establishes a special procedure whereby working farmland can be assessed at a lower rate for property taxes, with a penalty provision if the land is subsequently sold for other purposes. CZM encourages localities to utilize this authority for protecting remaining agricultural land in the coastal zone.

--Historic District Act (MGLA, Chapter 40C) - This act enables cities and towns to establish historic districts for the preservation and protection of historic buildings and places. Within such districts, demolition, new construction, and alteration to exterior architectural features cannot be carried out without a certificate of appropriateness or certificate of non-applicability. Similar procedures are followed for historic districts established by special legislative acts. These approved procedures apply to state owned land or buildings within the district, unless such land or building is specifically exempted by the historic district by-law or ordinance or by the special act.

"CZM will compile an inventory, which will be updated periodically, of significant historic, archeological, architectural, and cultural sites or districts

that they minimize damage to the natural environment, but not necessarily to stop them. Under the MEPA regulations, smaller projects are exempt from the reporting and review requirements. The MEPA statute directs all agencies of the Commonwealth to "review, evaluate, and determine the impact on the natural environment of all works, projects, or activities conducted by them" and "to use all practical means and measures to minimize damage to the environment." Thus, all public projects that are not specifically exempt from MEPA will be reviewed to insure consistency with this policy.

--National Historic Preservation Act and Related Federal Acts - Review and mediation procedures are established under the National Historic Preservation Act to ensure that federal agencies undertaking or licensing projects take steps to mitigate adverse effects on historic districts or sites either listed in the National Register or eligible for placement in the Register. In addition, the 1966 Department of Transportation Act bans the use of historically significant property for transportation projects unless there is no prudent or feasible alternative. The Massachusetts Historical Commission is, by law, required to be consulted during the review and mediation procedures, and CZM, in consultation with the Commission, will lend its support to Commission findings of adverse effects on designated historic districts or sites, by deeming the proposed federal action inconsistent with the CZM program.

Policy (15) Expand visual access in urban areas and provide views of coastally dependent activities with significant educational or interest value.

Outright acquisition of waterfront land in urban areas or acquisition of easements should be utilized in conjunction with recreation and open space programs to expand visual access. These measures can be used to develop new waterfront parks and to provide pedestrian or bicycle access around facility perimeters to views of harbors and other coastal activities and natural features. Public investment can be used in conjunction with private waterfront redevelopment projects to provide open space, pedestrian, and visual amenities in return for physical access.

Additionally, it may be feasible to procure physical access to afford views of marine terminal, ship building and repair, and commercial fishing operations. Simple measures such as installing interpretive signage or observation platforms along the waterfront can also be used to maximize the visual benefits of harbor activities.

Factors to be considered for determining implementation priorities should include:

1. viewing population served,
2. extent and quality of harbor views that would be offered by improved physical access,
3. potential educational value of viewing waterfront facility operations and components,
4. maintenance, security, and safety problems that would result from expanded public access,
5. cost feasibility.

#### IMPLEMENTATION

Expansion of visual access in urban areas can best be accomplished in conjunction with development of physical access to recreation, open space, and waterfront redevelopment projects. Therefore, CZM will work with those agencies involved in funding these types of projects to ensure that opportunities for expansion of visual access to the shoreline and its activities are maximized. CZM will also work with MASSPORT, local port authorities, and private interests to investigate opportunities and constraints to providing visual access to contemporary coastal dependent activities. Additionally, joint development projects in which public and private sector interests combine to develop mutually reinforcing amenities and facilities will be encouraged.

--State Programs - Potential state level funding sources to improve visual access in urban areas in conjunction with new open space and recreation opportunities include the Self-Help Program and capital outlay programs of the Department of Environmental Management, the Metropolitan District Commission and the Public Access Board. (See Recreation section.)

--Federal Programs - Potential sources include the disposition of surplus properties by the General Services Administration, the Land and Water Conservation Fund of the BOR, HUD's Community Development Block Grants Program, and Coastal Zone Management Act, Section 315 funds. (See Recreation section.)

Policy (16)     Encourage scenic river, scenic highway, and scenic road designation in the coastal zone and support designation of Areas for Preservation and Restoration as "Sign Free Areas."

#### IMPLEMENTATION

Localities and the Commonwealth are vested with certain designation and management authorities relating to the protection of important scenic corridors. In addition to reviewing proposed publicly funded projects as outlined in Policy (13), CZM will encourage use of these designation powers as outlined below, particularly in Areas for Preservation or Restoration.

--Scenic and Recreational Rivers Act, MGL, Chapter 21, Section 17A - provides for the designation and restriction of rivers of the Commonwealth for scenic and recreational purposes. As legislated, the authorities of this act include regulating the alteration or pollution of designated rivers and contiguous land within 100 yards of their banks. CZM recommends that segments of certain rivers within the coastal zone be included in this system and that restrictive orders be developed which will protect their irreplaceable scenic and recreational values. Designation and subsequent management should be strongly responsive to local interests and could vary from river to river. As a prerequisite to designation, community groups requesting designation should prepare preliminary management plans demonstrating how the concerns expressed in the act as well as local concerns would be incorporated into a program for managing future development and activities in the river corridor. Alternative controls that could be implemented include, for example:

1. Require, as a minimum level of control, building setbacks which would allow for the preservation of a vegetated buffer strip to screen development along river banks. Adoption of minimum lot sizes, maximum heights, cluster zoning and exterior appearance performance standards should be encouraged as more effective means of control. Where these controls would be insufficient for preservation of irreplaceable scenic qualities, land use zoning should be adopted that would permit only those uses consistent with existing visual character.
2. Restrict construction of major dams or impoundment of water, except for fishery management and other uses which would not adversely affect scenic quality.
3. Restrict development of major roads and river crossings, and suggest scenic road designations.
4. Prohibit development in sensitive natural areas along the river course, e.g., floodplains, wetlands, steep slopes, exposed bedrock, unstable soils.
5. Encourage access and shoreline recreational uses consistent with the aesthetic character of the river.
6. Encourage water activities consistent with the aesthetic character of the river, and where necessary impose speed limits, water surface zoning, or other restrictions.

CZM is assisting the Department of Environmental Management in drafting regulations and guidelines for implementation of the program in the coastal zone. Criteria to be considered in the selection of rivers for designation include:

1. local interest in scenic river designation,



2. accessibility of the river to existing and potential viewing populations and recreationists; availability of existing and potential access points,
3. the diversity of natural features and intactness of bank vegetation and other natural features - the degree of intrusion of adverse human development,
4. the degree of modification of the free flowing nature of the river,
5. suitability of water quality for recreation activities and ecological sensitivity to recreation-related impacts,

Furthermore, rivers and estuarine complexes located in designated Areas for Preservation and Restoration should be given highest priority in the Scenic River designation process.

--Scenic Roads Act, MGLA Ch. 40, Sec. 15C - Empowers local planning boards to restrict the removal of vegetation or stone walls on designated local roads, exclusive of numbered routes or state highways. CZM encourages designation of all local roads within APR's as scenic roads.

--Scenic Highways - On the state level, a scenic highway assessment process has been initiated by the Department of Public Works. In a preliminary study,<sup>5</sup> scenic qualities of primary roads throughout the state have been assessed to develop a preliminary ranking of roads meriting designation as Scenic Highways. As suggested in the study, further assessments at the micro scale are needed to make a final determination. CZM will assist further evaluation of coastal zone highway segments using its maps of scenic elements, Significant Resource Areas and Areas for Preservation or Restoration, to identify the relationships of particular highway segments to significant coastal zone visual resources. CZM will recommend optimal locations for scenic overlooks, rest stops, and other roadside facilities, and will identify areas with potential for improving visual access through easement purchase and/or selective clearing of vegetation.

Alternative means for protecting visual quality in areas adjacent to designated scenic highways are currently being evaluated by the Department of Public Works. Basic existing authorities include powers of eminent domain or purchase in fee or lesser interest in land within or adjacent to Federal-Aid Highways for the purpose of scenic enhancement. Whatever the management system adopted, CZM strongly recommends that designated scenic highways be exempted from statewide highway design standards which would necessitate the widening, straightening or flattening of road rights-of-way and alignments. The compatibility of scenic highways to the landscape - the fact that they "fit" with natural topographic and vegetation features - is basic to their scenic value.

--Control of Outdoor Advertising, MGLA Chapter 93D - Billboards, signs, and other advertising devices are currently regulated in Massachusetts through permit procedures administered by the Outdoor Advertising Board. Rules and regulations promulgated by this Board prohibit the use of off-premise billboards and other forms of advertising along primary roads in areas that are not zoned commercial/industrial or are not of a predominant business character. The Board also has the power to designate areas of historical, scenic, or environmental significance as Sign Free Areas or Sign Free Corridors, wherein no permits for off-premise advertising will be granted or renewed.

In order to reduce the adverse visual impacts of outdoor advertising in the coastal zone, CZM will:

1. Petition the Board of Outdoor Advertising to designate Areas for Preservation or Restoration as Sign Free Areas.
2. Support the development and implementation of a system of roadside information service directories in areas where outdoor advertising is prohibited.
3. Provide technical assistance to local communities in the development of advertising and signage ordinances which can improve the effectiveness of current state level controls.

#### TECHNICAL NOTES AND SOURCES

1. For a comprehensive review of the relevant literature see Haskett, Sarah, "Evaluating Visual Quality of the Coastline: Some Significant Issues" New York Sea Grant Institute, 1976 and the following sources:

Craik, Kenneth H., "Environmental Psychology." New Directions in Psychology, 4. New York: Holt, 1970.

Fines, K.D. "Landscape Evaluation: A Research Project in East Sussex," Regional Studies, vol. 2 (1968) pp. 41-55.

Kaplan, Rachel. "Predictors of Environmental Preference: Designers and Clients." Environmental Design Research, Vol. I. Ed. by W.F.E. Preiser. Stroudsburg, Pa.: Dowden, Hutchinson, and Ross, Inc., 1973, pp. 265-274.

Kaplan, Stephen, Kaplan, Rachel, and Wendt, John S. "Rated Preference and Complexity for Natural and Urban Visual Material," Perception and Psychophysics, vol. 12, no. 4 (1972).

Litton, R. Burton. Water and Landscape: An Aesthetic Overview of the Role of Water in the Landscape. Port Washington, New York: Water Information Center, Inc., 1974.

Lowenthal, David. "Not Every Prospect Pleases--What is our Criterion for Scenic Beauty?" Landscape, vol. 12, no. 2 (Winter 1962-3), pp. 19.

Rapoport, Amos and Kantor, Robert. "Complexity and Ambiguity in Environmental Design," Journal of the American Institute of Architects, No. 33 (July, 1967), pp. 210-221.

Sanoff, Henry. "Measuring Attributes of the Visual Environment." Designing for Human Behavior: Architecture and the Behavioral Sciences. Ed. by John Inag, et al. Stroudsburg, Penn.: Dowden, Hutchinson, and Ross, Inc., 1974.

Zube, Ervin H. Scenic Resources and the Landscape Continuum: Identification and Measurement. Ph.D. dissertation, Graduate School of Geography, Clark University, 1973.

2. Results of the recent CZM public opinion survey indicated that 81% of the Massachusetts residents polled felt that views of the water and its activities were important.
3. For further elaboration of aesthetic characteristics of natural features in the coastal zone see; Roy Mann Associates, Aesthetic Resources of the Coastal Zone, prepared for OCZM, NOAA, 1975, and Shoreline Appearance and Design, prepared for the National Park Service and New England River Basins Commission, 1975.

4. In *John Donnelly & Sons, Inc., vs. Outdoor Advertising Board* (339 N.E. 2d 709, 1875 Mass. Adv. Sh. 3450), the Court found that cities and towns may enact reasonable billboard regulations designed to preserve and improve their physical environment, thus establishing a precedent for zoning based on aesthetic or visual concerns.
5. DPW/U. Mass. Joint Transportation Program. A Scenic Highway Assessment Process for Massachusetts Highways. May 1975.



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## Ports and Harbors

## PORTS AND HARBORS

### SUMMARY OF FINDINGS

Protected bays and river mouths have special value to Massachusetts. Such coastal features have traditionally provided stable waterfront for piers, wharves, warehouses, and other facilities. Hence, these areas have developed into our major ports of water related industry and trade.

The contribution of ports to the Massachusetts economy is not merely a phenomenon of times past. Various maritime related industries now operating in the major ports directly employ approximately 50,000 persons. Some waterfront uses are expected to experience limited growth; these include general cargo not shipped by container and dry bulk cargo. Others, including container shipping, ferry services, marine industry and recreational boating, exhibit a potential for development and a growing need for harborfront space. With the enactment of the federal 200-mile fishery conservation zone, Massachusetts looks toward a significant revival in its fishing industry. And, if substantial quantities of oil and natural gas are discovered on the Georges Bank, we expect to accommodate this trade in our ports also.

Yet the traditional maritime related industries of our ports are not homogeneous. Fishing, maritime shipping of goods and people, other marine industry and services such as ships and boat yards and recreational boating are all vital port activities. All accrue economic benefits to the citizens of the state. Yet in some instances, these activities may compete for waterfront space and, at times, one use is not compatible with another.

The severest competition for harborfront space occurs in ports having navigable channels of 20 foot depth or more and a developed transportation infrastructure. These ports are most suitable for maritime shipping and marine industry. However, many of these areas are major fishing industry ports, and, as urban centers, face pressure for neighborhood and urban waterfront renewal. In addition, while the lack of deeper channels makes the siting of a marine terminal impossible in shallow harbors, no such constraint exists for recreational boating traffic or other uses requiring shallow drafts in deeper waters. Hence such ports face competition from the whole range of waterfront uses which may or may not have other siting options.

The cost of establishing other deepwater channels, with adequate infrastructure, and available sites abutting the channels is prohibitively high. Existing deepwater channels are ideally suited for accommodating uses which are of state or national importance because they provide protein (fisheries), are key parts of the transportation network (maritime shipping) or support maritime shipping (tugboat services, ship repair yards) and energy exploration, development, and delivery (OCS support bases, etc.). Hence the

navigable channels of 20 foot depth or more together with their abutting lands and inland transportation access routes should be treated as important state resources.

In smaller harbors lacking both the channel depth and the transportation and utility infrastructure to support major maritime shipping, marine industry, and the fishing industry, assistance is needed to help develop facilities for recreational boating, ferry services, and small-scale fishery operations. The mixture of recreational craft, fishing vessels, and ferry services lends an image of bustling harbor activity which makes views of the harbor highly attractive. Thus these kinds of waterfront dependent activities can enhance the character of waterfronts and can complement urban waterfront renewal.

Lastly, as discussed under the Marine Environment section, the dredging of relatively pristine coastal areas can have long lasting and severe adverse effects on marine productivity. By ensuring maximum use of existing ports and harbors and their facilities, benefits from public expenditures will be maximized, future public costs minimized, and the marine environment conserved. The creation of new ports and harbors should thus be discouraged unless the use to be accommodated cannot be met in existing port and harbor areas, or unless the project presents lower risks of environmental damage. First priority should be placed on maintaining existing channel depths and mooring and turnaround basins. Deepening of channels and expansion of mooring and turnaround basins should proceed only when essential to waterfront dependent uses of particular economic importance to the state or nation - fisheries, maritime shipping, and marine industry. In addition, both maintenance and deepening operations will necessitate provision of environmentally acceptable disposal solutions.

#### DEMAND PRESSURES AND DEVELOPMENT OPPORTUNITIES

This section presents the space needs of the fishing industry, maritime shipping, ferry and cruise services, other maritime industry and services, and recreation boating. All require waterfront locations; many have expansion possibilities. Also discussed are the opportunities for waterfront renewal -- a use of harborfront lands which may compete with maritime dependent uses.

#### THE FISHING INDUSTRY

The fishing industry requires harbor space for mooring and berthing fishing vessels, for unloading catch and taking on supplies, and storing and processing fresh fish.

The proximity of major fishing grounds to the Massachusetts coast makes unnecessary the complex factoryship technology employed by foreign fishing fleets. Massachusetts fishermen prefer to take and sell fresh fish, which, when sold as fresh tablefare, commands a higher price than frozen fish. Fishing vessels return to home port after, at most, a seven to eight day trip to off-shore fishing grounds. Longer stays would result in spoilage of fish stored in the hold. The vessels used in this fishery seldom exceed 100 feet in length and can

draw up to fourteen feet of water. The day-tripping inshore fishermen and lobstermen employ boats and vessels of far smaller draft, usually drawing six to ten feet of water. Thus the ports and harbors of interest to fishermen are those with navigable channels ranging from roughly seven to twenty feet.

A single pier or wharf with road access and parking for trucks is sufficient for the simple and low volume processing and marketing operations where fresh fish is unloaded, perhaps eviscerated, and packed and iced for quick truck transport to market. For the more complex and high volume filleting operations, space for filleting houses or stalls is required, as is cold storage space and better truck access and parking. Single unloading points make possible more modern mechanized unloading techniques, and when large volumes of fish are unloaded and processed, concentration of processing facilities on one wharf or in one area minimizes transfer and spoilage costs.

Over the long-term, the amount of harbor space required depends on the size of anticipated Massachusetts landings and markets for fresh fish. Prospective landings and market outlook determine the number of vessels in the industry and the size and number of fish storage and processing plants.

Since foreign fleets began fishing off the coast of Massachusetts in the early 1960's the catch brought ashore in Massachusetts has declined from 480 million pounds in 1960 to 258 million pounds in 1975, the number of Massachusetts fishing vessels has decreased from 512 to 410 over the same time, and the number of fish wholesalers and processors has declined from 236 in 1960 to 209 in 1974.

The extension in 1976 of U.S. jurisdiction over fishery resources to 200 miles offshore, however, promises to spur a revitalization of the domestic fresh fishing industry. Depleted stocks will be allowed to recover. The off-shore catch by all nations will be limited so that reproduction can generate sufficient replenishment to sustain an equal volume of catch each year. Foreign fleets will only be permitted to harvest that amount of the total allowable catch for which the domestic fleet has insufficient capacity. Analysts contend that the domestic fish catch could double or triple over current levels and the fishing fleet could increase by 100%. Others are less optimistic, but the fishing industry generally agrees that the 200-mile limit should at least return the fishing industry to its 1960 standing.<sup>1</sup>

Since 1960, the traditional, major Massachusetts fishing ports - Gloucester, Boston, and New Bedford - have, however, either completed substantial port improvements for the fishing industry (as in the case of New Bedford) or are planning to expand facilities for the fishing industry (as in the case of Gloucester and MASSPORT for the Boston Fish Pier). Thus the capacities of these traditional fishing ports are substantially improved over conditions in 1960.

As wholesaling, cold storage, and processing facilities are concentrated in Gloucester, Boston, and New Bedford, these ports are likely to absorb most of the projected increases in vessels and landings.



Other harbors may need improvements to accommodate growth. Off-shore vessels are also based at such harbors as Provincetown, Hyannis, Chatham, Woods Hole, Nantucket, Plymouth and Scituate. With the extension of the 200-mile limit, some of the facilities serving these vessels may require expansion and improvement to accommodate increased landings and newer vessels. These same harbors, as well as those of Newburyport, Sandwich, Nantucket, Martha's Vineyard, Cohasset, Rockport, Westport, Manchester, and others also serve as centers for inshore fisheries, lobstering, bay scalloping, and clamming. If Massachusetts is to retain and promote a healthy fishing industry, dockside improvements for many of these smaller ports and harbors will be necessary.

Often the contribution to a community's economic health by smaller-scale fishery operations is overlooked, and fishing industry needs for dockside facilities are neglected. In response to a September 1976 CZM questionnaire, the Massachusetts fishing industry voiced particular concern over the inadequacy of berth space for unloading catch or taking on supplies or gear, the lack of dockside facilities to store and repair gear, and the problem of having to tie-up fishing vessels two or more abreast. Also, questionnaire respondents from smaller harbors as well as larger fishing ports most frequently cited the following future needs as the most urgent: extending or constructing public docks at which to berth fishing vessels or boats, and the construction of dockside support facilities for storage and processing.

#### MARITIME SHIPPING

The maritime shipping industry requires deepwater channels and port space for short-term anchorage and mooring of vessels; berths for loading cargoes; storage areas, warehouses, tanks, or silos for cargo storage; and rail and road connectors to move goods efficiently from inland points to ports and vice-versa.

As merchant fleets of older "tramp" steamers and "T-2" tankers, and smaller bulk carriers are retired from service because of age and obsolescence, increasing proportions of merchant fleets will be comprised of larger tankers and bulk carriers and large specialized cargo ships like containerships. This new generation of ships generally requires deeper channels -- forty to sixty feet in depth. At the same time, barge and tugboat technology has advanced considerably over the past twenty years, and barges of nearly 40,000 DWT are now being constructed. The smaller investment costs for tugs and barges, compared to ships, their smaller manning needs, reduced labor costs, and lower drafts for equivalent tonnage makes barges ideally suited for short hauls and smaller ports. Such barge traffic generally requires channels of twenty foot depth or more.

Under ideal conditions, maritime terminals should be located as close as possible to open water so as to minimize in-harbor maneuvering, the costs incurred for pilotage and tugboat services, and time in transit. In addition, turnaround basins should be large enough to eliminate time-consuming maneuvering to and from berthing facilities. Normally, marginal wharves rather than finger piers are preferred, as bringing a ship to or from a berth can be accomplished with fewer maneuvers. Older, narrower finger piers do not provide

the extensive depth of space required for today's mechanized cargo handling operations.

Ideally, the land area between the marginal pier and seaport road and rail connectors should be large enough to include all the operations required to transfer seaborne cargo to land transportation modes and vice-versa. These operations include storage of in- and out-bound cargo, freight consolidation, truck and rail car storage, handling equipment movement, and security and administrative services. For example, a modern containerport capable of handling two ships simultaneously requires 1800 feet of marginal pier and up to 100 acres of land storage area. Rail and road connectors to such terminals should provide direct linkage to major trunk lines and arterial road networks. Such connectors should be capable of bearing high traffic volumes without causing congestion, safety hazards, and delays.

The volume of shipping in any given port, and hence the industry's need for port space, is determined by prevailing economic conditions, by the costs of maritime shipping compared to other transportation modes and by the comparative shipping costs of one port versus another. Given the complexity of these variables, the future volume of maritime shipping cannot be easily predicted. However, many port facilities in Massachusetts could accommodate larger shipping volumes simply because existing capacity is under-utilitized.

Petroleum products carried by tanker or barge and destined either for general distribution or power plants comprise the major volume of Massachusetts freight traffic. Through the existing network of petroleum product marine terminals, Massachusetts receives some 75% of its average daily consumption of 600,000 barrels of petroleum products. Berthing capacity for barges and normal sized tankers at the major Massachusetts petroleum terminals is sufficient to serve the increases in tanker<sup>2</sup> traffic required to meet Massachusetts' future petroleum product needs. However, as consumption of petroleum products grows with population increases, more tank farms will be necessary to maintain reasonable reserve stocks of petroleum products on hand. Given the area occupied by tank farms (17-20 acres for a one million barrel tank farm), however, many Massachusetts ports may be physically unable to accommodate substantial increases in tank farms.<sup>3</sup> Tank farms storing products for general uses, such as gasoline and home heating oil, need not be located on the waterfront; they could be moved inland with petroleum products fed to them by pipeline from marine terminals (see Energy below). Moreover, the use of available harborfront space for tank farms could prejudice meeting the future needs of waterfront dependent uses whose return in terms of employment, income generation, and local taxes are higher.

In addition to petroleum products, Massachusetts ports figure prominently in the delivery of other energy fuels. To supplement supplies of natural gas from interstate pipelines, liquified natural gas (LNG) is brought to Massachusetts in specially designed ships as are feedstocks from which synthetic natural gas (SNG) is manufactured. With continued shortages of domestic natural gas, maritime shipment of LNG and feedstocks for SNG is likely to increase. Petroleum and gas shortages may bring about, as part of a national energy policy,

greater use of coal to generate electricity and to supplement reliance on petroleum and gas by energy intensive industries. For this reason, colliers may once again become common in Massachusetts ports. Should commercially exploitable coal reserves be discovered in the Narragansett Basin, maritime shipment for export of such coal or coal based products may develop.

Liquid and dry bulk cargoes, other than energy supplies, do not figure largely in Massachusetts' maritime shipments or receipts. New York and the mid-Atlantic will remain the primary ports for large dry bulk cargoes. The probability that Massachusetts will become a major distribution center for such trade is slight. Indeed, existing berthing capacity in Massachusetts for bulk cargoes is much underutilized; any increase in chemical, other liquid or dry bulk cargoes could be accommodated at existing terminals by installing<sup>4</sup> more modern cargo handling facilities and expanding storage space.

In the past twenty-five years, general cargo shipment has been revolutionized. Reliance on general cargo ships and tramp steamers has lessened, and shipments by container or other unitized cargo methods are forecast to reach a level of 70-80% of all dry, general cargo in the U.S. east coast trade.<sup>5</sup> Boston is the only Massachusetts port equipped to handle efficiently the new generation of large transoceanic container-ships.

Demand projections prepared for MASSPORT forecast that by 1990 container traffic in the port of Boston could justify facilities with an annual capacity ranging between a low of 98,200 containers to a high of 360,000 containers. A more recent study suggests that by 1990 a facility capable of handling 241,000 containers will be necessary.<sup>6</sup> In late 1976, containership arrivals were occasionally so frequent that ships were forced to anchor until occupied container-ship berths were free -- a sure sign that containerport facilities in Boston are already overtaxed.

Success in containerport operations is dependent upon attracting a high volume of freight traffic through the port to justify frequent containership calls; frequent calls by containerships also attract a greater volume of freight traffic into the port. Containerships are far costlier to build and operate than the older generation of "tramp steamers." If their owners are to turn a profit, ship turnaround time must be faster and the pay-off from each port of call higher than was true for older general cargo ships. Thus containerships are made to operate at few ports of call and only those where freight volumes are sufficient to make such calls worthwhile. Boston has already established itself as a containerport, and the duplication of container facilities in other New England ports would undercut attempts to revitalize Boston as a seaport. Moreover, any new container facilities would have to compete for the same business with established services at Boston, thereby running a high risk of underutilization or failure.

While Boston should serve as the New England region's major container shipping port, possibilities for the continued health in the port operations of other Massachusetts ports should not be ne-

glected. Tugboat and barge services and RO's-RO's (roll-on, roll-offships designed to carry cars, tractor trailers, or containers which can be wheeled on or off via stern or aft openings) will increasingly be relied upon in the shipment of cargo. For these kinds of shipping services, ports can be more easily adapted and at less capital cost than for container operations. It is to these kinds of cargo services as well as fishing industry development and other marine industry that other ports of Massachusetts -- New Bedford and Fall River, for example -- should look to in securing expanded gains from port operations.

#### FERRY AND CRUISE SERVICES

In Massachusetts, passenger movement by ship is confined to transoceanic liners calling at Boston's Commonwealth Pier and to local cruise and ferry services connecting the mainland with various islands, along with commuter and recreational destinations. Regular service from Woods Hole to Martha's Vineyard and Nantucket is supplemented, during the busy summer months, by additional sailings and by ferry services operating from Hyannis and Falmouth Harbor. Goods and passengers are moved to Cuttyhunk by ferry from New Bedford. Hull and Provincetown are connected by ferry service from Boston; and commuter boat service between downtown Boston and Hingham is under experiment. Cruise services around Boston Harbor are increasingly popular. Charter and party boats for sportfishermen operate out of such harbors as Newburyport, Lynn, Plymouth, and Hyannis.

Ferry and party boats seldom require channels deeper than eighteen feet. Proximity to public transit and parking lots and garages can make these services more accessible and minimize the need for extensive new parking areas.

By and large, existing passenger, ferry, cruise, and party boat terminals could accommodate substantially increased sailings. The growing ridership on the Boston Harbor cruises and heightened interest in commuter boat services suggest a latent demand for such travel. In particular, promotion of cruise, ferry, and party boat services to recreational destinations, or as a recreational pursuit themselves, could help to relieve coastal traffic congestion during the busy tourist summer season, open up coastal recreation to families without automobiles, and bolster tourist economies. If this potential is tapped, some redevelopment and relocation of berthing terminals and other facilities will be required.

#### OTHER MARINE INDUSTRY AND SERVICES

Industries relying on maritime shipping to transport bulk raw material or processed goods seek port locations in order to minimize transfer costs. These industries include the frozen fish industry which processes imported frozen fish blocks for distribution to the U.S. market, two Boston sugar refineries which refine raw sugar transported by ship, U.S. Gypsum which relies on maritime shipping to deliver gypsum and limestone to its Mystic River plant, and Proctor and Gamble which uses maritime shipping to deliver caustic soda to its Quincy plant.

Shipbuilding, ship and boat repair yards, marine service firms (tugboat services, marine construction firms) and offshore mining support services also require land along deepwater channels to carry out their activities. The Massachusetts shipbuilding and repair industry embraces 81 establishments and includes General Dynamics in Quincy (one of the largest shipyards on the East Coast); Bethlehem Steel, Bromfield Corporation, General Ship and Engine Works all in East Boston; Munro Drydock in Chelsea; Fairhaven Marine and D.N. Kelley both based in Fairhaven; Gladding-Hearn in Somerset; and smaller firms concentrating on boat building and repair, located in a large number of harbors including Gloucester, Dartmouth, Marion, Mattapoisett and Marblehead.

Marine industry covers a wide spectrum of activities, some of which, like boatbuilding, require only shallow channels of at most 10 to 12 feet in depth, while others, such as commercial shipbuilding, require water depths of 30 to 40 feet. For those marine industries that rely on maritime shipping, channel drafts must be as deep as those required for maritime shipping. Generally speaking, the harborfront space requirements and road and rail access needs are similar to those for maritime shipping, although space for the actual manufacturing activity must also be provided. In addition, proximity to public transit for the industry's work force is desirable. Like any other major industrial development, water and sewer services must be available.

The future harborfront space requirements of these varied industries differ. While the frozen fish industry has tended to concentrate in traditional fishing ports, a number of processing facilities are now located inland, relying on road or rail to transport frozen fish blocks from Canada or from Massachusetts ports of entry, such as Gloucester, Boston, or New Bedford. Thus the future requirements of this industry need not be met in port or harbor areas. The needs of other marine industries, reliant on maritime transportation, depend on individual locational decisions by firms and cannot be predicted.

Sufficient demand for a major, new (as opposed to an expanded) shipyard is unlikely. The eleven major U.S. shipyards (Quincy Dynamics among them) are likely to be able to meet whatever shipbuilding demand materializes for the entire nation.<sup>7</sup> With continued increases in recreational boating and the revitalization of the fishing fleet, Massachusetts should expect some increase in the size and number of small boatyards and repair facilities.

The future demands by offshore mining support services for port and harborfront space cannot yet be accurately foreseen. Exploring for oil and gas on Georges Bank and the development of whatever resources are discovered could lead to the location of extensive supply bases for offshore operations and platform rig construction and pipe coating yards in Massachusetts. During exploration stages, each offshore drilling rig typically requires two to three supply vessels, relaying to the offshore site crew, drilling mud, water, cement, and piping. Onshore, additional berthing space for such supply vessels, storage areas for supplies are required. Assuming, for example, that in the early years of OCS exploration on Georges Bank a maximum

of six to eight drilling rigs are located offshore, 1,200 - 1,600 feet of berth space and up to 40 acres of storage area may be needed.

Should development of off-shore oil and gas occur, permanent service bases would be established and additional service-oriented firms would set up depots. These include cement companies, specialized drilling tool and equipment suppliers, well casing, well-head equipment, and wireline service companies. All of these also require land in a port with some dock space, and they tend to locate in the same ports as service bases.

In the event of a major find on Georges Bank, oil or gas company demand for production platforms (from which production wells are drilled) may exceed the supply capacity of existing platform construction yards, and a platform construction yard may be sited in New England. Such a facility requires 200-1,000 acres of land, 500 feet of shoreline on a waterway with a minimum of 30 feet of draft with unobstructed access to the ocean so the platform can be easily transported to the OCS site.

Should an oil find on Georges Bank prove large, that is, an average flow rate of at least 150,000 to 200,000 barrels per day over a ten to fifteen year period, or should substantial gas reserves be discovered, a pipeline would probably be laid from the production platforms to shore. In this event, a pipe coating yard may be established. Such a facility, at which the pipe is coated to prevent corrosion and a layer of cement added to help the pipe sink to the ocean floor, typically requires 100 to 150 acres of waterfront land, 95% of which is used for pipe storage. The yard must have a minimum of 750 linear feet of waterfront land that can be used for dock space with a minimum draft of up to ten feet at which pipelaying barges can onload coated pipe.<sup>8</sup>

In addition to offshore oil and gas development, other forms of offshore mining - for sand, gravel, manganese nodules, other minerals - may materialize off Massachusetts. These, too, might create a demand to accommodate shipping and processing facilities along the Massachusetts coast.

#### RECREATIONAL BOATING

Most recreational boats seldom exceed ten feet in draft; thus harbor areas having navigable water depths between six and ten feet are ideally suited for such craft. Recreational boats either require mooring space in which to anchor boats while not in use, marinas at which boats are berthed in slips, or access ramps from which boats are trailered to and from the water. Necessary support services for recreational boating include fueling services, boat supply and repair yards, and pump-out stations for sewage. In addition, parking for those using marinas or access ramps is necessary.

Given the harshness of the winter climate in Massachusetts, recreational boating largely takes place in the late spring, summer, and early fall months. Boat storage needs during the winter months are

met by on-land storage at marinas or boatyards, by trailering boats for storage at home, or by "wet" storage.

Recreational boating demand has increased substantially over the past several decades, and recreational planners have projected an unmet need for facilities roughly equivalent to present capacity. This demand can be met either by expanding mooring basins, encouraging marina development, or construction and expansion of access ramps (see further discussion under Recreation section).

#### URBAN WATERFRONT RENEWAL

Harborfronts provide vistas of the sea and views of harbor activities. These settings can attract a wide variety of uses and structures which do not depend on waterfront locations to function. These include housing, parks, and urban recreational facilities, institutions, and a wide variety of commercial uses including restaurants, hotels, office buildings, and shops. The mixture of these uses in port and harbor areas can provide opportunities to the general public for visual and physical access to waterfronts. (See Visual Environment section.) In addition, by taking advantage of the visual assets of waterfront areas, communities can spur major redevelopment in otherwise deteriorating downtown areas. Some coastal communities, including Boston, Newburyport, and Nantucket, after years of neglecting their waterfronts and effectively turning their backs to the sea, are attempting to open up their neighborhoods and downtown areas to the sea, thereby creating new and revitalized urban environments. Similar opportunities for such redevelopment might occur in other port and harbor areas, but this development potential remains untapped.

The successful revitalization of waterfront neighborhoods and downtown areas depends on how well harbor views are made an integral part of redevelopment. If harborfront vistas are reserved for a few private developments and access to these viewpoints is restricted, the gains from redevelopment will not spread to surrounding neighborhoods and abutting downtown areas. The key to successful waterfront rehabilitation is to make the harborfront an inviting and significant attraction to residents and visitors alike. Small waterfront parks, open space abutting bulkheads, or piers accessible to the public, and walkways and pedestrian overpasses and ramps providing views of major harbor activities, can help to provide the accessibility to the water front that makes it attractive.

Those attracted to the waterfront as well as local residents provide a natural market for restaurants, cafes, hotels and stores. Such commercial establishments which serve the public also can help to provide additional visual and physical access to the waterfront and heighten vitality of the area. Public transit and public parking facilities are required if the renewal area is to draw large number of visitors. Ease of pedestrian access, inviting walkways linking shopping, restaurant areas with both the waterfront and residential neighborhoods and downtown areas also are prerequisites for successful waterfront redevelopment.

SUPPLY CONSIDERATIONS, SITE SUITABILITY  
AND ENVIRONMENTAL CONSTRAINTS

The U.S. Army Corps of Engineers, the Massachusetts Division of Waterways, the Massachusetts Port Authority, the U.S. Coast Guard, municipalities, the U.S. Navy, the U.S. Economic Development Administration, and the Department of Housing and Urban Development has already expended nearly \$400 million in public funds on port and harbor improvements in Massachusetts.<sup>9</sup> Many navigable channels, mooring basins, and facilities created by these investments are not fully utilized.

A number of ports contain vacant or under-utilized lands and docks adjoining channels of 20-foot depth or more. Examples include the South Boston Naval Shipyard, the Charlestown Navy Yard, the MASSPORT piers in East Boston, the Cordage Park in Plymouth, the North Terminal in New Bedford, and the lands abutting the state pier in Fall River. In other ports, developable land for maritime related uses is no longer available or extremely limited. Such is the case in Salem, the Mystic River, Chelsea Creek, and Gloucester Inner Harbor.

In harbors, where channel depths are not sufficient to accommodate ocean-going vessels, development potential for recreational boating, fisheries, and ferry and cruise services remains under-utilized. Beverly Harbor, Lynn, Plymouth, Hull, and the Mt. Hope Bay communities, for example, present such opportunities.

In yet other cases, port and harbor facilities could support heavier utilization through redevelopment, modernization, and employment of space saving techniques. Conversion of state piers to accommodate newer kinds of shipping, rehabilitating the Boston Fish Pier, or extension of town docks for fishermen could, for example, help to stimulate higher economic returns from these original investments.

Clearly the most efficient uses of these underutilized resources would be to promote usage of those sites from those waterfront dependent uses for which they are best suited. Simply put, extensive vacant lands (50-300 acres) adjoining large turnaround basins of up to 40 feet in depth with quick access to the open ocean and good road and rail connectors are ideally suited for the siting of a containerport or platform construction yard. In Massachusetts such sites are extremely rare. Smaller tracts adjoining channels of 20-40 feet in depth and with good road and rail access are suited for other forms of maritime shipping and marine industry. Many of the port areas with these characteristics, however, have also been developed as major fishing ports, thereby compounding the competition for space. Very small tracts adjoining shallow draft harbors (6-10 feet in depth) are suited for recreational boating development and small-scale fishery operations. Approximately one hundred harbors possess these characteristics; and, since recreational boating can



also be accommodated in deeper harbors, site requirement constraints for these activities are not as severe.

Determinations of site suitability for the varying waterfront uses must take into account the character of neighborhoods surrounding port and harbor areas. Siting a containerport, pipecoating yard, or an oil terminal, for example, in areas abutting residential neighborhoods might well affect the visual character of the area and cause severe truck traffic problems. On the other hand, some waterfront activities actually enhance neighborhood and harbor character. To many the presence of fishing fleets in sheltered harbors presents a desirable seafaring image and enhances the interest and character of the harbor. Recreational boating facilities - marinas, boatyards, marine supply stores - can lend vitality to commercial districts in harbor towns. Ferry services and the tourists and visitors they attract bolster the economy of commercial business activities in harbor areas.

Accommodating a variety of waterfront uses in one harbor can lead to conflicts. Recreational boating in a busy commercial port can clog shipping lanes, causing safety hazards and delays to shipping. Fishermen whose boats or vessels are their primary capital asset cannot afford to construct their own piers. Their efficiency is enhanced by the use of one pier for both unloading and taking on stores. They rely on fish processors, the state or community to provide such space. Yet, for the private developer or the community greater profit may accrue by converting such space to recreational boating or other use, forcing the fishing industry to move to other ports or harbors.

Market forces lead to these kinds of competition, and in planning for port and harbor usage, some notion of the overall significance of the various uses requiring waterfront space must be employed. From a national and state perspective, three waterfront uses - the fishing industry, maritime shipping, and support services for maritime shipping - stand out as meriting special preference in the allocation of port and harbor space.

The fishing industry capitalizes on the fisheries resources off the coast, which represent one of the few natural economic endowments Massachusetts enjoys. As a permanent indigenous industry, a significant supplier of the nation's protein, and a source of full and part-time employment for 15,000 people, the fishing industry deserves preference over most other uses competing for port and harbor space.

Transportation costs are kept at a competitive level by the availability of maritime shipping services which provide an alternative to other modes of transport - air, rail, and truck. The shipping industry also serves as a vital lifeline, providing the Massachusetts economy with energy supplies and raw materials. Indirectly, the shipping industry induces substantial numbers of jobs and income: MASSPORT estimates that the port of Boston generates \$250-\$450 million annually in income and serves some 4000 firms. Boston's shipping services also provide the infrastructure for the export of manufactured goods; Massachusetts ranks eleventh in the nation in the export of such goods, the production of which accounts

for an estimated 32,100 jobs. These attributes dictate that marine terminal development, when justified by demand, be given a preference along with the fishing industry over other competing uses for port space.

Some marine industry, such as tugboat services and ship and boatyards, provide needed support services for the fishing industry and maritime shipping and thus deserve preference in the allocation of port and harbor space. Support services for OCS exploration and development, while important to exploiting needed energy supplies, are short-lived, lasting only as long as the life of exploration or the life of discovered finds. Their temporary nature dictates that the preference afforded them in allocating port or harbor space should be carefully weighed against possible detrimental effects on more permanent uses such as maritime shipping and the fishing industry. Lastly, industry dependent on maritime shipping for receiving raw material or exporting products constitutes an important source of employment in Massachusetts, accounting for some 3,000 jobs. Such industry should be promoted in the ports of Massachusetts when accommodating such uses would not be prejudicial to the expansion of the fishing industry or maritime shipping.

Other waterfront uses - ferry services, recreational boating, and urban waterfront redevelopment - provide important benefits to tourism, the revitalization of downtown commercial centers, and neighborhood rehabilitation. However, these uses can be accommodated in conjunction with each other and in a variety of locations. Moreover, as mentioned previously, their site requirements, compatibility with general commercial and residential use, and need for developed transportation infrastructure is distinctly different from the heavier, more intensive waterfront dependent uses. Thus, these uses are best promoted in waterfront areas which do not have the potential to serve large-scale fishing industry operations, maritime shipping, and marine industry.

Maximizing the use of existing navigable channels minimizes the need for extensive new dredging and consequent impacts on the marine environment of both dredging and spoil disposal. Furthermore, the return for past public expenditures will be maximized. The cost of new public improvements will also be minimized because the costs of maintaining or deepening old channels are generally cheaper than the costs of creating new ones.<sup>10</sup> The marine environment will also be conserved, for existing ports and harbors already represent departures from natural conditions, and new disruptions to relatively untouched areas of the marine environment will be kept to a minimum.

In certain isolated instances, however, legitimate environmental concerns should constrain the expansion of port and harbor activities. As discussed in Marine Environment, the continuance or increased levels of waterfront dependent use can threaten the productivity of coastal reaches. Port and harbor activities are sometimes sited in those areas most sensitive to environmental damage, such as estuaries and coastal embayments containing salt marsh systems, eel grass beds, shellfish flats, fish spawning grounds, anadromous fish runs, shallow bottoms, and exhibiting poor circulation and flushing characteristics. These are identified in the regional chapters as significant marine ecosystem resource areas and areas for preservation or restoration.

## OBJECTIVES

The preceding discussion suggests that the ports and harbors of Massachusetts should be managed so as to achieve the following objectives:

1. To allow for expansion of economically important maritime dependent activities, including fishing, shipping, and other marine industries;
2. To facilitate harbor improvements needed by fishermen, cruise and ferry services, and the general boating public;
3. To encourage revitalization and rehabilitation of developed harbor areas and- promote physical and visual access to waterfront for the general public;
4. To maximize the economic return and public benefit for publicly supported port and harbor works.

## CMZ POLICIES AND PROGRAM RECOMMENDATIONS

Policy (17) Encourage maritime commerce and related development in port areas. Prohibit preemptions of present and proposed maritime-dependent industrial uses. Permit non-maritime dependent industrial uses which do not represent an irreversible commitment of sites and which do not preempt foreseeable maritime-dependent industrial uses.

The existing port areas of Massachusetts represent a valuable economic resource ideally suited for large-scale maritime shipping, marine industry, and the fisheries industry. Many of the lands abutting these deepwater channels are either in the hands of public agencies or have been or will be improved using public funds. The appropriateness of the uses of these lands is thus of legitimate public concern.

Water and land areas which exhibit the following characteristics are defined to be port areas:

1. navigable channels of 20 foot depth or more,
2. available land abutting such channels which by its topography, size, separation from residential neighborhoods, and/or zoning is suited to accommodate maritime dependent activity,
3. well-developed road and rail links to port areas leading to major trunk and arterial routes, and

4. water and sewer services capable of accommodating major industrial needs.

(Note: in many instances, only small portions of an embayment, or what is commonly termed a harbor meet the criteria for a port area. Therefore, "port area" designation may include only segments of harbors. In isolated instances, waterfronts are so developed that the port area is confined to a single maritime terminal, as in Salem.)

Maritime-dependent industrial development includes large-scale fishing operations, maritime shipping and other marine industries. These uses will be favored in designated port areas because they require the space, facilities and infra-structure existing in such areas. Furthermore, these industries are of economic importance to the state and the nation. All proposals for maritime-dependent industrial developments in port areas will be encouraged by CZM and will be facilitated as much as possible by EOE agencies, unless the proposed use will seriously conflict with or preempt, either economically or physically, other existing maritime-dependent industrial uses in that port or other ports. Should conflicts arise among maritime-dependent uses, state and federal permit and funding actions shall be granted to the use which is more limited in its spatial, locational, or economic options and denied to the other use.

Proposals for development in port areas which are not maritime-dependent will be permitted so as not to deter viable economic uses of vacant port lands. However, should a conflict arise between a project which is not maritime-dependent and a foreseeable maritime-dependent use, state and federal permit and funding actions shall be denied to the non-marine dependent use if:

1. public agencies and/or fishing, maritime shipping or marine industry spokesmen have expressed interest in the site for waterfront dependent uses of particular state or national economic importance; and
2. the proposed activity would irreversibly commit the site and the site is the best available for the foreseeable maritime dependent use.

In determining "irreversibility" and "best available", the following factors shall be considered:

irreversibility:

- can the proposed structure be converted to maritime dependent use?
- is the proposed use or structure of a duration or type that is permanent and not easily removed?
- is future maritime--dependent use of the area effectively denied because water or land access for vessels or truck and rail transportation is precluded?

--are lease stipulations such as to allow future conversion of the site to maritime-dependent use?

best available:

--for the foreseeable maritime-dependent use, are alternative sites in port areas available possessing similar characteristics (size, availability of road and rail access, proximity to major shipping channels and open water, suitable turnaround basins and channel depth)?

--will the use of alternative sites present graver environmental and safety problems (proximity to residential neighborhoods, overloading of road or rail capacities, harbor congestion, expose greater numbers to environmental harm or safety risks)?

IMPLEMENTATION

Required EOEa permits or licenses for bulkheading, filling, dredging, bridge or pier construction in port areas shall be issued if projects meet the requirements of Policy (17) and existing statutory criteria. In addition compliance with the policy and its related criteria shall be enforced through CZM review for federal consistency of federal assistance and federally conducted or supported activities in port areas as well as of federal permits or licenses for dredging, filling, and construction in waterways. When determinations must be made to resolve conflicts between competing maritime-dependent use, CZM shall recommend to EOEa and federal permitting agencies that a public hearing be held to elicit information on the nature and facts of the conflict. CZM may also recommend to the EOEa permitting agency and to Secretary of Environmental Affairs the preparation of an environmental impact report under the Massachusetts Environmental Policy Act to provide for broader public review of the pending decision, to assess available alternatives and to provide additional analyses and information pertinent to the resolution of the conflict.

The issuance of EOEa permits, orders or licenses required for dredging, filling, or construction in waterways required for the establishment of an energy facility in port areas shall abide by Policy (17) and existing statutory criteria. However, should such an EOEa permit be denied either because the facility does not depend on maritime shipment of fuels or because the facility will conflict with other maritime-dependent uses, the utility may appeal the permit decision to the Energy Facilities Siting Council (EFSC) and request a Certificate of Environmental Impact and Public Need. By granting a Certificate, the EFSC may overturn licenses or permit decisions and allow the facility to be sited.

Among those permit and license authorities which are most likely to apply to projects in port areas are:

-- Waterways Program (MGLA Ch. 91) - The Waterways Program has authority over tidelands, harbors, and certain rivers below the high water mark. Activities covered by such licenses include filling,

wharf construction, bridges, pipelines, etc. DEQUE as trustee over public lands below low water thus issues licenses, and not permits for the permission to interfere with these public lands. Between low and high water the land is in private ownership but is subject to a reservation to the public in their rights to fish, fowl, and navigate.

Under the law, all licenses are to expire after five years or upon non-use. If, to secure financing, the developer needs to obtain an irrevocable license from the Legislature, CZM will actively support such legislation. Should the project be a non-water dependent development, it will still be licenses provided the criteria relating to non-maritime dependent uses are met.

-- --Wetlands Program (MGLA Ch. 131, S. 40) - Gives local conservation commissions power to place conditions on dredging and filling of wetlands, floodplains, beaches, etc., following guidelines established by the Commissioner of DEQUE. In instances in port areas when orders of conditions are more onerous than necessary to protect the interests of the act the Commissioner shall use his statutory discretion to issue a superceding order when necessary to implement CZM policy.

-- --Energy Facilities Siting Council (MGLA Ch. 164, S. 69f-69r) - Has jurisdiction over all siting and facility plans of major oil, gas and electric developments. Through a Memorandum of Understanding between the EFSC and CZM, the Council has agreed to consider various factors prior to approving a facility or site under the forecast approval process. For energy facilities that are not coastally dependent (oil facilities for the storage or refining of oil, and electric generating facilities), the EFSC, should a coastal zone site be proposed, will examine alternative sites outside the coastal zone and the relative environmental and economic impacts of siting the facility at the differing locations. For energy facilities that are coastally dependent (gas facilities used to transfer and store gas or transfer feedstocks for ship to shore, oil facilities, for ship to shore transfer of oil and oil storage facilities (save those constructed for bunker fuel storage, surge storage or storage of oil for electric generating plants approved for coastal zone site), the EFSC will examine whether additional facilities are needed, air and water quality, dredging, public safety, and other port impacts. (See Energy for further details). The Council will weigh these factors prior to permit processing by EOEa agencies, however, by virtue of the Council's power to grant Certificates of Environmental Impact and Public Need, the EFSC retains ultimate siting control over energy facilities. For federal consistence purposes, the federal permit or licenses required for siting of an energy facility will be deemed consistent with CZM, upon issuance of required EOEa permits or granting of an EFSC Certificate of Environmental Impact and Public Need, which ever marks the last stage of state permit processing.

-- --Permits for Filling in Navigable Waters - Under Section 404 of the Federal Water Pollution Control Act of 1972 (33U.S.C.1344), the Corps of Engineers issues permits governing the discharge of dredged or fill material in the waters of the United States. Since the scope

of jurisdiction over navigable waters is very broad, the Corps is implementing this program in three phases. It is, at present, exercising jurisdiction over coastal waters and coastal wetlands and fresh-water wetlands contiguous or adjacent to coastal or inland navigable waters. In later phases its jurisdiction will include tributaries, other inland waters adjacent to tributaries, and other navigable waters.

Under the Corps regulations and the Federal Consistency regulations, the Corps may not issue a filling permit without a CZM approved certification of consistency. CZM will assign high priority for maritime-dependent industrial developments in port areas. It will more closely scrutinize and appropriately condition non-water-dependent industrial developments in port areas.

-- Permits for Obstructions or Alterations in Navigable Waters of the United States - Are granted by the Corps of Engineers under Section 10 of the Rivers and Harbors Act of 1899. This permit covers such projects as sinking pilings, attaching moorings, placing outfall pipes, or digging tunnels. While the scope of jurisdiction under this permit is not broad as for Section 404 permits, it does cover waters susceptible for use in interstate commerce, up to their high water line; this includes all marine waters plus many inland waters. CZM's consistency certificate for developments in port areas will be issued on the same criteria as for Section 404 permits.

-- Permits for Construction or Modification of Bridge Structures Across the Navigable Waters of the United States are granted by the U.S. Coast Guard. CZM shall exercise its federal consistency review to ensure the height, placement, and design of bridges do not interfere with the growth of maritime-dependent uses in port areas.

-- CZM will also encourage maritime-dependent industrial uses in port areas through a number of technical and financial assistance programs discussed under policies (18) and (19)

Policy (18) Promote the widest possible public benefit from port and harbor and channel dredging and ensure such proposals are consistent with marine environment policies.

Adequate channel depths are a prerequisite for any kind of waterfront dependent activity. Given the public funding for dredge projects is limited, public agencies must, of necessity, allocate these funds to projects which provide the greatest public benefit and demonstrate the most pressing need. At the same time, dredging and disposal especially of contaminated dredge material, can cause severe and lasting adverse impacts on the marine environment.

As discussed in the Marine Environment, all dredging, be it public or private, shall be:

- 1) restricted in salt marshes, dunes, sandy beaches, barrier beaches, and shellfish flats, and

- 2) confined to maintenance dredging in designated Areas for Preservation or Restoration and salt ponds.

Public funding for dredging will only be allocated to port areas (as defined in Policy (17)) and in developed harbors. Developed harbors are defined as those which meet at least one of the following characteristics:

- 1) provides public mooring space, berths, slips, ramps, and docks which serve a region-wide boating public, as evidenced by either (a) public access to the harbor which is free or open for a nominal fee to non-residents and which has adequate parking facilities; or (b) a significant number of mooring spaces or slips which are available to the general public on a first come, first serve basis; or (c) very heavy boating traffic,
- 2) hosts harbor facilities used by commercial fishermen,
- 3) serves cruise boats, ferries and other marine industry, and/or
- 4) presents unique development opportunities for the fishing industry or for waterfront renewal and revitalization.

In port areas and developed harbors, maintenance dredging will have the highest priority for public assistance. Publicly funded maintenance dredging will be scheduled so that projects demonstrating the most pressing need, widest public benefit, and least environmental damage are carried out first.

Deepening or expansion of channels and mooring or turn-around basins beyond authorized or existing depths or size will be approved for state or federal funding if the project meets two of the following criteria:

- 1) provides broad public benefits for recreational boating which are spread over a region and which rebound to the general public and is necessary to resolve harbor conflicts between fishermen and recreational boaters;
- 2) enhances benefits to the commercial fishing industry;
- 3) produces economic returns to maritime shipping and other maritime industries by reducing turn-around times and in-harbor transit delays, and permits usage of more efficient sized vessels; and/or
- 4) reduces navigational safety risks.

Also, in order to encourage location of maritime shipping and marine industry in existing port areas, proposals for creation of new channels or mooring and turn-around basins of 20-foot depth or more



will only be permitted, publicly assisted or developed if:

- the need to be met by the project is of national or statewide importance and cannot be accomplished in designated port areas and the project demonstrates that damage to the environment will be less.

Finally, in both port areas and developed harbors, CZM will provide technical assistance, fund feasibility studies, and work actively with concerned agencies to arrive at environmentally responsible dredge and dredge disposal solutions.

#### IMPLEMENTATION

Required EOEa permits or licenses for dredging (discussed more fully under Policy (17)) shall be issued if dredge projects meet the requirements of Policy (18) and existing statutory criteria. In working with the Waterways Program to devise regulations to govern the Waterways Program, CZM will recommend provision for extended-term licenses for maintenance dredging thereby eliminating the need to re-apply yearly for approval of routine maintenance dredging. Compliance with Policy (18) and its related criteria shall also be enforced through CZM review for consistency of federal assistance, federally conducted or supported activities, and federal permit or licenses for dredging. The principal programs relevant to Policy (18) are:

-- --U.S. Army Corps of Engineers - Grants permits for dredging under Section 404 of the Federal Water Pollution Control Act of 1972 and under Section 10 of the River and Harbors Act of 1899 and funds and carries out channel and navigational works. CZM will approve certifications of consistency for such permit applications and projects which meet the criteria described above. CZM will also work actively with communities, port authorities, and the Corps to ensure that dredge projects within ports and developed harbors meeting the benefit criteria described above, are authorized, funds appropriated, and work begun expeditiously.

-- --Waterways Program (MGLA Ch. 91) - Grants licenses for dredging and funds dredging projects. Through an evaluation system developed with Waterways, funding will only be approved if the project meets the criteria described above.

-- --Ocean Sanctuaries Acts (MGLA Ch. 132A, S. 13-17) - Have been created to protect all state waters except those from Swampscott to Marshfield and those in Mt. Hope Bay. While the terms of the five sanctuaries vary, in general such activities as removal of any sand, gravel or minerals, any dumping, or any waste discharge are prohibited, and shore protection, water navigation aids or fish harvesting are permitted. A significant clause permits improvements approved by appropriate federal and state agencies; under the flexibility created by this clause, the Department of Environmental Management (DEM) and the exercise of federal consistency by CZM will

ensure Policy (18) and its related criteria are complied with. CZM will also work with DEM to prepare regulations for administering the program.

-- --Coastal Zone Management Act, Section 306 - Once the Secretary of Commerce has approved the Massachusetts CZM Program, CZM may disburse a portion of its funding to support feasibility and project development studies aimed at arriving at environmentally sound dredge disposal practices and sites.

Policy (19) Encourage, through technical and financial assistance, the expansion of water-dependent uses in port areas and developed harbors where the risks of damage to the marine environment are minimal.

In addition to funding dredge projects, state and federal agencies provide planning and infrastructure development assistance that help make possible needed expansion in facilities for maritime shipping, the fishing industry, cruise and ferry services, other marine industry, and recreational boating. Such assistance is extended for both overall harbor planning and construction of piers, docks, bulkheading, ramps, navigational aids, and other harbor works.

In order to ensure that maximum use is made of existing infrastructure and that possible damage to the marine environment is kept to a minimum, CZM will actively promote extension of such assistance to:

1. port areas defined under Policy (17); and
2. developed harbors defined under Policy (18).

#### IMPLEMENTATION MEASURES

Many technical and financial assistance programs operated by state and federal agencies can be made supportive of water dependent development. CZM will network with these programs to ensure that they consistently encourage and facilitate water-dependent development. The more significant of these programs include:

-- --Waterways Program (MGLA Ch. 91, S. 10-11) - Projects are carried out to improve wharves, fund public piers, construct jetties, bulkheads, and shore protection works, dredge channels and remove wrecks. CZM has worked with the Waterways Program to develop a system for evaluating project requests from communities. Under this system, funding will be granted to projects that provide widespread public benefits and which rank high with respect to fishing, shipping, recreational, and environmental values. In addition, the Waterways Program under MGLA Chapter 91, Section 9A, may develop harbor plans through acquiring, improving and developing needed pier and terminal facilities. Such facilities may then be leased for private sector operations. Upon request by a community, CZM will provide planning, legal, and technical help to acquire necessary rights and easements and to prepare such a harbor plan. CZM will also use its best efforts with the Legislature and federal and state funding agencies to garner the financing for acquisition and construction.

-- --Coastal Zone Management Act, Section 306 - Once the Secretary of Commerce has approved the Massachusetts CZM Program, CZM may disburse a portion of its funding to support preparation of port and harbor development plans, assessing facility needs and the economic return from such facilities; and conducting feasibility and preliminary engineering studies for public marinas, town wharves and docks, access ramps, and navigational improvements.

-- --Public Access Board (MGLA Ch. 21, S.17, 17A) - Is empowered to designate, acquire, and develop sites for boat ramps and other facilities providing recreational access to water. CZM will work with communities and the Board to develop boat ramps and related facilities in developed harbors. These efforts will reflect the priorities indicated in the Recreation section and the Regional Chapter.

-- --Massachusetts Division of Water Pollution Control (MGLA Ch. 21, s. 43) - Approves sewer hook-ups and treatment plant construction. It also supports the engineering and construction of municipal sewage treatment facilities with grant funds made available under Section 201 of the Federal Water Pollution Control Act. Both the Division and areawide waste water management planning agencies, funded by Section 208 of the Federal Water Pollution Control Act, plan for the location, capacity, and size of service area of municipal sewage treatment plants. CZM will work with communities, the areawide waste water management planning agencies, and the Division to improve sewage treatment infrastructure in existing port areas and developed harbors to support higher and desired levels of economic development without compromising water quality standards. It will also strive to ensure that opportunities for the construction of pump-out facilities for watercraft wastes are not overlooked.

-- --The Federal Highway Administration within the Department of Transportation, administers a federal aid highway program which provides financial assistance to states for highway construction in and among urban areas. CZM will work with Massachusetts' highway planning agency, the Department of Public Works, to promote investment of these urban systems funds in roadways which link port areas with existing population centers.

-- --Department of Public Works (MGLA Ch. 90) - Is authorized to construct, improve and maintain all non-federally funded roadways. In effect these include most urban and rural roads which do not provide direct access to a major population center or access between population centers within metropolitan areas. Thus communities wishing to construct or improve port and harbor access roads must usually seek state funding or finance these public works themselves. CZM will work with the Department of Public Works and regional transportation planning agencies to ensure that port and harbor access road projects receive priority consideration for state funding.

-- --Economic Development Administration - Provides grants to public entities and loans to public and private entities for the construction or expansion of public work projects which offer substantial employment potential, improve the capacity for economic growth through the development of facilities conducive to the location of industrial and commercial enterprises, or provide essential services to the citizens of economically depressed areas. This program finances such projects

as industrial parks, access roads, water and sewer systems, and the expansion of harbor and airport facilities. CZM will act as an advocate before the Economic Development Administration to support funding for water dependent development in port areas and developed harbors.

-- --In addition to the above programs, others described under Policy (20) (Housing and Urban Development, Urban Mass Transit) can be used to promote water-dependent development. For all these and other funding programs, CZM will affirmatively review under A-95, MEPA, and NEPA processes, issue federal consistency certificates, and work toward funding project developments which meet the policies of the plan.

Policy (20) Encourage urban waterfront redevelopment and renewal in developed harbors in order to link residential neighborhoods and commercial downtown areas with physical and visual access to the waterfront.

CZM will, through technical and financial assistance and through project review, promote this CZM policy in developed harbors and in other urban waterfronts. The latter includes shoreline areas which do not presently contain developed harbors but which are characterized by extremely dense, urban residential neighborhoods or commercial development.

#### IMPLEMENTATION MEASURES

Key among the many state and federal programs applicable to this policy which fund projects through planning, acquisition and construction stages are:

-- --Department of Housing and Urban Development provides, under the Housing and Community Development Act of 1974, direct grants to state, metropolitan, and regional planning agencies for land use, housing, urban, and redevelopment planning. In addition, formula and discretionary grants under the Community Development Block Grant Program, intended to help eliminate problems of low-income persons, may be used for improving living conditions, conservation of expansion of housing and housing opportunities; for increased public services; for improved use of land, including recreational facilities; increased neighborhood diversity; and for preservation of property with special values. Under the A-95 review process, CZM will champion applications encompassing CZM's waterfront renewal policy and strive to ensure that adequate funding is provided by the Department of Housing and Urban Development.

-- --Coastal Zone Management Act, Section 306 - Once the Secretary of Commerce has approved the Massachusetts CZM Program, CZM may disburse a portion of its funding to support preparation of harborfront plans aimed at improving visual and physical access to waterfronts, identifying opportunities for waterfront parks, waterfront pedestrian ways, ramps, and other public access improvements; conducting feasibility, cost, and preliminary engineering studies for such waterfront improvement projects.

-- --U.S. Bureau of Outdoor Recreation provides matching grants to state and local communities for recreation planning, acquisition, and facilities development under its Land and Water Conservation Fund (P.L. 88-578) and reviews proposed federal water development proposals to ensure full consideration of outdoor recreational needs (P.L. 89-72). The Bureau is actively committed to enhancing urban recreation and access opportunities; CZM will act as an advocate before it for recreation development proposals which enhance developed harbors and other urban waterfronts.

-- --Waterways Program (MGLA Ch. 91) - has authority to carry out projects for bulkheads, public piers, wharves, jetties, and shore protection works. Under a new procedure, developed in coordination with CZM, requests for project funding are systematically evaluated with respect to recreational benefits, secondary economic benefits, environmental enhancement, and consistency with state growth policy. Active support for waterfront renewal is given special recognition in the system since one of the evaluative criteria is whether the project contributes to redevelopment efforts.

-- --Urban Mass Transportation Administration provides grants and loans to states for transit planning, development, and operation. Transit systems act to spur development and revitalization by facilitating access between given areas. CZM will work with municipal planners, transit authorities, and the Department of Public Works to encourage the provision of transit projects which serve CZM's waterfront renewal policy. CZM will champion such projects before the Urban Mass Transportation Administration.

-- --Department of Public Works administers a Federal Highway Administration program which provides for planning and development of bicycle transportation and pedestrian walkways. Projects can be incidental features of highway construction or can be independent walkways or bikeways. CZM will actively promote the use of this program to provide physical and visual access to developed harbors and other urban waterfronts. In addition, CZM will work with the Department, regional transportation planning agencies, and communities to ensure that opportunities to provide visual and physical access to urban waterfronts are not overlooked when designing new or improved roadways and bridges in developed harbors and other urban waterfronts.

-- --The siting of state and federally supported facilities such as educational institutions, subsidized housing, or museums as well as commercial shopping areas and tourist area accommodations can help to revitalize waterfront areas by providing opportunities for visual and physical access to the harbor. Through the information channels provided by the MEPA, NEPA and A-95 reviews, plus the other program authorities described under Policy (19), CZM will actively promote the use of such projects and programs in developed harbors and other urban waterfronts to help link residential neighborhoods and commercial downtown areas to waterfronts and will ensure that opportunities for providing such access are not overlooked.

#### TECHNICAL NOTES AND SOURCES

1. For information on and estimates of domestic fish catch under extended jurisdiction, see National Marine Fisheries Service, Staff Report, Fisheries Management Under Extended Jurisdiction, March, 1975, pp. 32-33, and Draft National Plan for Marine Fisheries, June, 1975, pp. 7-8, 44-51; and Olsen and Stevenson, Commercial Fish and Fisheries of Rhode Island, 1975, pp. 47-48. Olsen and Stevenson contend a doubling of the fleet together with substantial modernization will be necessary if the domestic fleet is to catch the entire potential harvest in ICNAF Area 5. This estimate is open to considerable question as, under extended jurisdiction, Canada and the United States will each control a portion of the area off their coasts and other nations which have traditionally fished these areas are likely to be given some fishing rights. In addition, securing the investment necessary for fleet expansion and modernization will take time. Hence, a 50% rather than a 100% increase in domestic fleet size is more likely to materialize.

In September 1976, CZM distributed some 500 questionnaires to fishermen, processors, and fishing cooperatives and associations. In the 74 replies received, covering 19 Massachusetts ports and harbors, the fishing industry evinced relative caution in its prognosis of the size of the increases in catches to be expected from enactment of the 200-mile fishery conservation zone and marketing development efforts for under-utilized species. While 28% replied that landings would increase by between 50% and 100% and 27% expected an increase of over 100%, a small minority (12%) felt landings would not rise, and the largest number (33%) believed landings would only increase by 50% or less. Most believed marketing efforts for under-utilized species would play an important role in the resurgence of the fishing industry. Sixty-four percent indicated that under-utilized species will be "sizeable, but not as important as traditional species." Fishermen did not believe the 200-mile fishery conservation zone and marketing efforts for under-utilized species would bring immediate results. Most (40%) felt increased landings would materialize in 4-5 years; 30% believed results would only show 6 years or more.

2. See A.D. Little, Inc., Effects on New England of Petroleum-Related Industrial Development, 1975, Vol. III, pp. III-21, III-31, which estimates that the current average tanker berth occupancy rate for New England as a whole is 16% and for Boston (excluding Exxon's Mystic River terminal) 23% and which concludes that the risk of berth saturation in New England by the year 2000 is remote.
3. Data on petroleum products consumption compiled by the U.S. Bureau of Mines and on petroleum-bulk storage capacity compiled by the U.S. Bureau of Census, Census of Business and Intrametrics,

Petroleum Terminals in Massachusetts, 1975, for the years 1963, 1967, and 1972 suggest that Massachusetts has maintained a relatively stable reserve storage capacity for petroleum products amounting on average to some 25 days consumption. If Massachusetts is to continue to have a similar ratio of petroleum products on hand, then, by 1990, assuming historic growth rates in fuel consumption developed by A.D. Little Inc., Preliminary Projections of New England's Energy Requirements, 1974, new tank farm storage capacity of 41.3 million barrels will be required as compared to current capacity of 30.2 million barrels. With respect to expanding tank farms in existing ports and harbors, A.D. Little, Inc. found, for example, that, based on oil terminal land holdings, only a 20% increase in storage capacity (roughly three million barrels) was possible in greater Boston (see Preliminary Environmental Study of Alternative Methods of Supplying Petroleum Products to Eastern Massachusetts, 1973, Vol. III, p. III-6-III). Expansion possibilities at Salem, another deepwater port, are similarly constricted; all available space at the Salem Terminal Wharf is now taken up by New England Power Company's power plant and expansion of storage capacity by 1.2 million barrels (see U.S. Army Corps of Engineers, Draft Environmental Statement, Addition to Unit No. 5, Salem Harbor, March, 1975).

4. See Ernst, Frankel, Studies on the Future of Atlantic Ports, MIT Sea Grant, 1972, pp. 166-167 for assessment of future large bulk cargo terminal needs and which estimates (pp. 77-80) that only 6% of bulk berthing capacity is used in Boston.
5. Frankel, Ibid., p. 4. In addition to containerships, unitized cargo ships include RO-ROs (roll on, roll off) which are designed to carry cars, tractor trailers, or containers which can be wheeled on or off via stern or aft openings and LASH vessels (Lighter-Aboard-Ship Handling) which are designed to off and on load barges near ports lacking sufficient depth to accommodate deep draft vessels.
6. C.E. Maguire, Inc., New Containerization Facilities, A Feasibility Study for MASSPORT, 1973 and E.G. Frankel and C.E. Maguire, Inc., Containerport Study, 1974. The low projection of 98,200 containers was based on foreign trade growth only. The high projection of 360,000 containers was based on a) Boston recapturing a major portion of potential container export traffic from New England and the Mid-west now moving through other ports; and b) increases in feeder services to other U.S. ports.
7. In analyzing shipbuilding prospects for the General Dynamics Quincy Shipyard for the next 25 years, Booz, Allen, and Hamilton, Inc. prepared forecasts of the demand for U.S. merchant ships, crude tankers, and LNG carriers which indicated that projected demand was in line with the historic ability of U.S. shipyards to construct commercial ships (see Technical Report, Fore River Bridge Reconstruction Evaluation, 1975, Vol. III, pp. III-12, III-14). In further analyzing the capacity of the eleven major U.S. shipyards in meeting projected ship demand (including U.S. Navy orders), Booz, Allen and Hamilton concluded that for the period to 1985, with a high demand of 536 new ships, the eleven

shipyards in meeting projected ship demand (including U.S. Navy orders), Booz, Allen and Hamilton concluded that for the period to 1985, with a high demand of 536 new ships, the eleven shipyards would have a 41% deficit in capacity, but with a low projection of 291 ships, the shipyards would be operating at 90% capacity. For the period 1985 to 2000, shipyard market potential was expected to range from 64% to 105% of capacity (assuming existing shipyards expanded to their maximum available land area), Vol. III. pp. V-18-V-22. While these forecasts should not be viewed as conclusive, they do indicate that the market potential, on a national basis, for a new as opposed to expanded shipyard is limited in the long-term, and hence the prospects for a new, major shipbuilding establishment in Massachusetts are slim.

8. Material on onshore OCS support facilities extracted from New England River Basins Commission Resource and Land Investigation Project, Factbook: Onshore Facilities Related to Offshore Oil and Gas Development, August 1976; and Estimates for New England; Onshore Facilities Related to Offshore Oil and Gas Development, August 1976. For a guide to offshore oil development see, Office of State Planning; Commonwealth of Massachusetts, Offshore Oil Development, Implications for Massachusetts Communities, November 1976.
9. Based on Army Corps of Engineers project expenditures, MASSPORT port development expenditures, HUD and EDA grant to New Bedford and Gloucester for project improvements, and estimates of Division of Waterways, U.S. Navy, and Coast Guard expenditures for pier construction, navigational aides and other harbor works.
10. The construction of a containerport at Lynn or Squantum, for example, would involve the dredging of 9-10 million cubic yards of material to create a suitable channel and turnaround basin. At a cost of \$6/cubic yard, the dredging costs of such a facility at Lynn would total \$60 million. Siting a containerport at existing under-utilized lands having deepwater navigation channels in Boston; e.g., East Boston, South Boston Naval Annex, the Army Base, would avoid these costs.





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## Recreation

## RECREATION

### SUMMARY OF FINDINGS

Americans are participating in outdoor recreation more than ever before. The U.S. Bureau of Outdoor Recreation found that increases in leisure activities, particularly water-related recreation, far outstrip population increases. For example, from 1960-65, demand for fishing increased by 12%, swimming by 18%, and boating by 15%, while population grew by only 8%. Projections for the 1960-1980 period indicate that swimming demand will increase by 72% while the population is likely to increase by only 29%.<sup>1</sup>

In Massachusetts, the State Comprehensive Outdoor Recreation Plan estimates that the demand for swimming is highest of all recreation demands and is likely to exceed by four times all other needs for recreation in the next 25 years.<sup>2</sup> Because of a simultaneous dwindling of undeveloped coastal resources, meeting recreation demands is more difficult in coastal areas than in any other Massachusetts region. The New England River Basins' SENE Study estimates that approximately 130,000 additional acres are needed in coastal counties to meet all future recreation demands.<sup>3</sup> But the amount of coastal town acreage developed for non-recreation uses has increased by up to 500% over the last twenty-five years.<sup>4</sup> Some coastal towns, previously considered rural, currently have little undeveloped coastal land remaining.<sup>5</sup> Urban areas, chronically deficient in coastal recreational facilities, have few small and expensive coastal sites left. Thus, options for redistributing recreation opportunities are limited.

The high cost of land is another facet of the recreation dilemma. Traditionally, beaches have been purchased by the public sector since private enterprise cannot make a reasonable profit on beach recreation given the limited season, the high acquisition and operating costs and low revenues. As the price of coastal land continues to escalate, other recreation ventures have begun to flounder. Although marinas, boatyards, boat and motor sales have enjoyed high profits compared to other marine industries during the past few years,<sup>6</sup> marina owners say that they are having greater difficulties establishing and expanding their businesses; they cite lack of, or cost of, waterfront land as a primary cause.<sup>7</sup>

The recreation dilemma is critical. Solutions must be provided within the next decade or most remaining opportunities will be lost. Coastal recreation benefits cannot be narrowly construed: public land acquisition in the coastal zone can complement and help implement other Coastal Zone Management policies. Acquisition can, under proper management, conserve marine ecosystems and prevent property losses in flood damage areas as well as provide coastal recreational opportunities. Recreation sites and activities are good "gateway enterprises," attracting visitors who spend money on food, lodging, and tourist facilities.<sup>8</sup> Recreation can also spur development, and impart high values to existing housing stock as well as remaining open lands.<sup>9</sup>

There are also detrimental impacts of recreation. Recreation activities place high demands on transportation networks and other municipal services. Over-utilization and conflicting uses degrade the quality of the recreation experience as well as the surrounding natural and man-made environs, and the cost of maintenance and operation of the recreation facilities quickly approaches the cost of acquisition.

The Massachusetts shoreline as a whole is deficient in recreation facilities, particularly in Eastern Massachusetts. Eastern Massachusetts (Boston Harbor, North and South Shores) needs more opportunities for all recreation activities; Southeastern Massachusetts needs more public beaches for swimming; Cape Cod needs more facilities for boating and camping, but provides ample swimming opportunities, particularly on the National Seashore; and the Islands are deficient in all recreation activities.

Unfortunately, suitable new sites for recreation are not available in all regions. Opportunities in Eastern Massachusetts are the most limited, particularly for large sites such as state beaches and campgrounds. Acquisition of a few large military sites, however, could alleviate some of the shortages in this region. Buzzards Bay, Cape Cod and the Islands offer a greater number of opportunities for developing large recreation sites. However, these sites are distant from major population centers, and serious transportation problems are caused by many people driving to recreation sites. Additional investment in sites far from population centers can further aggravate congestion and other transportation impacts. Therefore, it is essential that improvements in non-automobile public transportation be considered as critical first steps in providing or expanding recreational opportunities.

Transportation improvements should foster greater use of underutilized or new recreational sites, should reduce the volume of the current transportation impacts of congestion and noise, and should be compatible with the capacity of recreational sites to accommodate visitors. Appropriate to the scale of these sites, jitneys, boat service, and bicycle and hiking trails should be developed and expanded. Such low intensity transportation can provide access without causing traffic impacts.

Acquisitions must also be sensitive to the scale of potential recreation appropriate on the site, as well as the scale of the surrounding community. For this reason, Coastal Zone Management finds that, generally, acquisition of small dispersed sites is preferable to acquisition of very large sites.

Similarly, small scale improvements at existing sites can mitigate existing impacts, and add to recreational opportunities. Such improvements include expansion, provisions for multiple use, and improved maintenance. This strategy is particularly appropriate to Eastern Massachusetts and other urbanized areas where there is little undeveloped land and use of existing facilities is intense.

Coastal Zone Management's primary concern is to increase and enhance public use of the Massachusetts shoreline while improving

existing facilities and minimizing future conflicts, over-utilization and environmental impacts. Our plan is to improve transportation and access; to acquire new sites in recreation poor areas; to expand suitable existing sites through small acquisitions or encouraging multiple uses; and to improve maintenance.

#### ACCESS: DISTRIBUTION AND TRANSPORTATION

Access to recreation sites is determined by their location and their transportation facilities. When recreation opportunities are available near concentrations of people, the necessity for long trips becomes less acute: e.g., Boston Harbor beaches are within a 15-30 minutes transit ride of most metropolitan area residents. However, where the distribution of recreation opportunities is not proportional to the concentration of residents, the need for transportation links is more critical.

In Massachusetts, coastal recreation sites, as well as coastal resources, water quality, and other requisites are not evenly distributed. Transportation links, understandably, were not planned to ameliorate the recreation imbalance. The uneven distribution of existing recreation sites and needs is portrayed in Table 1 and the accompanying map.<sup>10</sup> The table indicates that the Eastern Massachusetts region, including the North and South Shore areas and greater Boston Harbor, is most deficient in recreation areas. The State Comprehensive Outdoor Recreation Plan, the Massachusetts Growth Policy and the Coastal Zone Management Public Opinion Survey corroborate this finding.<sup>11</sup> Conversely, Cape Cod and Southeastern Massachusetts collectively provide the greatest supply of major water related activities. Sixty-five percent of Massachusetts' population is located in Eastern Massachusetts, but only 25% of the public water-related facilities are located there. Furthermore, the situation is even more acute than the figures indicate, as Eastern Massachusetts residents participate more in outdoor recreation than do citizens of the rest of the state. In order to reach areas where recreation supply is more plentiful, week-end recreationists have established a "commuting" pattern, based on the auto, which causes severe traffic jams. Coastal recreation commuting is serviced primarily by: I-95 and Route 128 to the North Shore; Route 1 to the near North Shore; Routes 3 and 3A to the South Shore and beyond to Cape Cod and Buzzards Bay; 228 to the near South Shore; Routes 6, 6A and 28 through Cape Cod; and I-95, 6 and 25 through Buzzards Bay and Mount Hope Bay.

Some recent improvements in major transportation links have been recreation oriented. For example, a proposed extension around Buttermilk Bay to connect with the Bourne Bridge may ease congestion; and widening of I-95 will increase use of North Shore recreation. Improvements like these, while increasing access to a broad area, will intensify impacts at the end of the recreational journey, since coastal towns are by nature geographic dead-ends and bottlenecks.<sup>12</sup>

Some non-auto alternatives complement or partly substitute for private vehicle transportation. The Boston Metropolitan Region is

TABLE 1: RECREATION SUPPLY/DEMAND

	<u>1975 Supply</u>	<u>1975 Demand</u>	<u>Demand</u> <u>Currently</u> <u>Satisfied</u>	<u>Needs</u> <u>(Demand not</u> <u>satisfied)</u>
	<u>*(Activity Days)</u>	<u>(Activity Days)</u>	<u>(%)</u>	<u>(Activity Days)</u>
<u>BOATING</u>				
**Eastern Mass.	2,800,000	9,100,000	30%	6,300,000
SoEa. Mass.	1,100,000	850,000	130%	none
Cape Cod	1,800,000	2,800,000	64%	1,000,000
Islands	90,000	1,400,000	6%	1,310,000
TOTAL	5,790,000	14,150,000	41%	8,360,000
<u>SWIMMING</u>				
Eastern Mass.	4,000,000	30,000,000	13%	26,100,000
SoEa. Mass.	1,700,000	3,900,000	44%	2,200,000
Cape Cod	29,700,000	9,200,000	323%	none
Islands	3,500,000	5,500,000	64%	2,000,000
TOTAL	38,900,000	48,700,000	80%	9,800,000
<u>CAMPING</u>				
Eastern Mass.	300,000	900,000	33%	600,000
SoEa. Mass.	400,000	100,000	400%	none
Cape Cod	500,000	1,400,000	36%	900,000
Islands	31,000	900,000	3%	869,000
TOTAL	1,231,000	3,300,000	37%	2,069,000
<u>SALT WATER</u>				
<u>FISHING</u>				
Eastern Mass.	Impossible to	7,600,000		
SoEa. Mass.	estimate, but	900,000		
Cape Cod	presumed at	1,800,000		
Islands	least as high	806,000		
	as boating			
TOTAL		11,106,000		

\*Activity days are defined as the use of a facility for any period of time during a single day. Also known as user days.

Supply "activity days" are based on nationwide survey work that identifies preferences for type and amount of recreation based on social and economic characteristics of the population. These figures have been modified by additional survey work specifically for Massachusetts.

Supply figures are based on the actual facilities and their ability to physically accommodate users. Although the figures are as accurate as possible, they should not be construed as absolute; their real value lies in the relative comparison of regions and activities.

\*\*Statewide Comprehensive Outdoor Recreation Plan (SCORP) regions were used for demand figures and represent broad areas; e.g., Eastern Mass. covers metropolitan Boston, the South Shore and the North Shore and west to about Route 495. However, for supply, Coastal Zone Management figures, calculated for coastal towns only, were substituted. Thus, the table shows inland and coastal demand for the supply of coastal recreation resources.

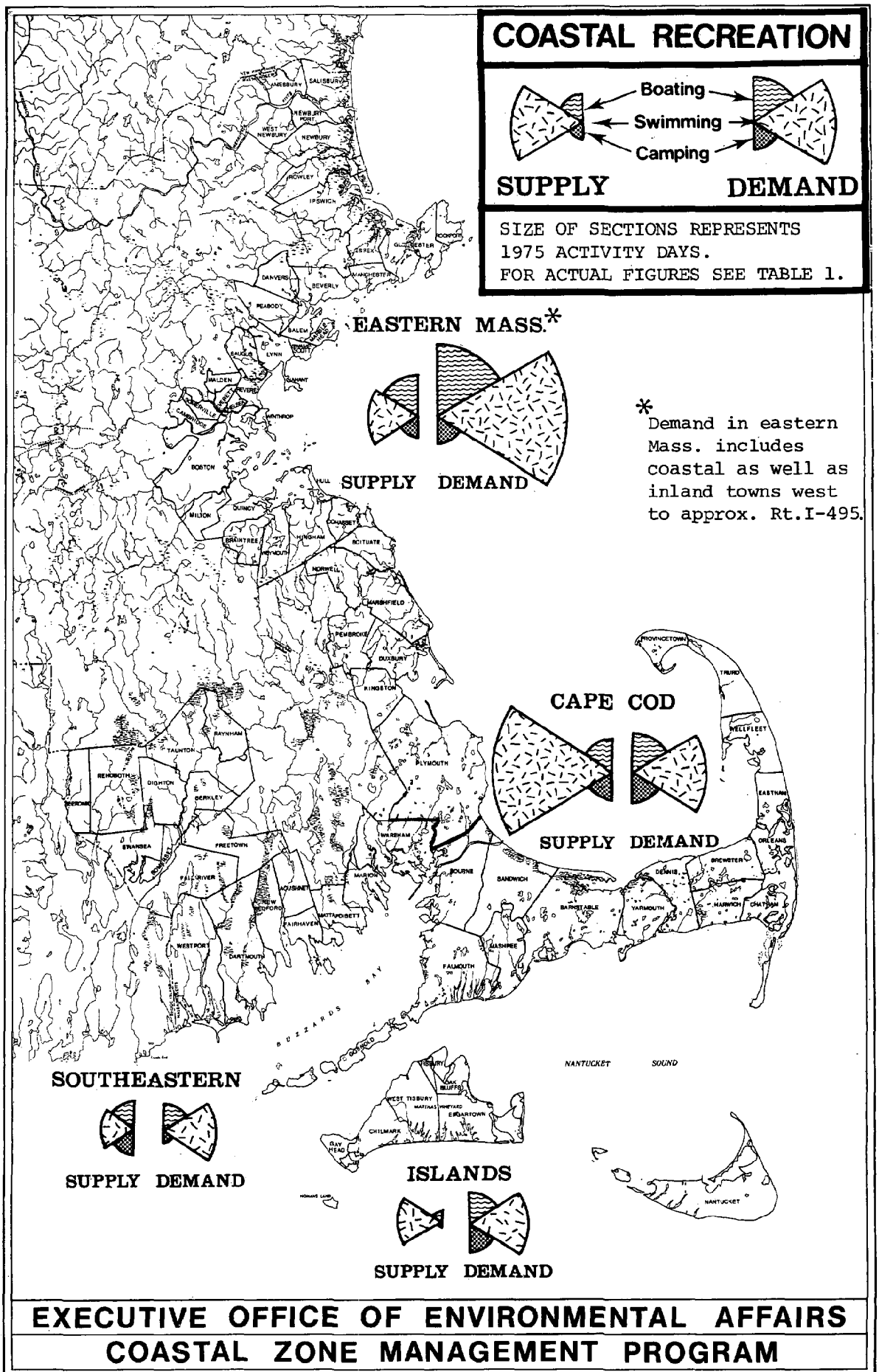


Figure 1 195

serviced by public transportation. City dwellers can take buses or subways to nearby beaches in Revere, Lynn, South Boston, Dorchester, and Quincy. Recently, the Southeast Region of the state has formed a transit authority which provides bus service for New Bedford, Fall River, Dartmouth, North Fairhaven, Mattapoisett and Somerset. Cape Cod has frequent bus service among towns on the Cape and from the Cape to Boston and the South Shore. Also, boat service from Boston to Provincetown offers transportation to recreation, as well as being a unique recreational experience itself.

Improvements like these are a necessary part of improving recreation access. Transportation must be planned for recreation. Creative alternatives to the automobile can be made more attractive. Pre-packaged bus trips, well publicized weekend recreational transportation, increased use of boats to Boston Harbor Islands, to other parts of the Harbor, South and North Shores, and to Cape Cod National Seashore are alternatives which can be instituted now and as recreation sites are acquired or expanded.

#### MEETING COASTAL RECREATION NEEDS: SPACE AND SERVICES

The primary alternative to improving transportation to distant recreation sites is to acquire, develop or facilitate recreation development in the most deficient regions. Given unlimited funding, it might be an ideal solution. However, since coastal recreation is dependent upon amenities like clean water and undeveloped sandy beaches, finding the best sites in the needy regions is difficult. This section identifies the requisites of major water-related activities and interprets from unmet "activity days" (Table I) the land and water acreage necessary to satisfy recreation needs. Attainment of this goal, however, will be limited by the capability of coastal resources to support increased recreation.

#### BOATING

Recreational boating requires marine facilities and services, slips or moorings in a harbor or similarly protected embayment, or launching ramp access. Ancillary services include Coast Guard and Harbormaster protection and, often, security police protection. Clean water is desirable but not necessary. Requirements for minimum water depths and bottom types become more critical as boat sizes increase.

In Massachusetts, approximately 100 recreational harbors hold over 300 marinas whose slips and ramps provide about 20% of the total supply of coastal boating activity days; 30 coastal public access ramps provide another 20%; while private, town and marina moorings provide 60%.<sup>13</sup> Satisfying just the presently unmet coastal boating demand would require doubling these "access" facilities.

It is unlikely that all of this demand could or should be met by one type of facility. However, for comparison, satisfying demand would require: the construction of 1000-1500 additional marinas, similar in size to existing marinas, at a probable private/public

investment of \$0.5-1 billion; or the construction of 150 additional public access ramps, at a probable public investment of \$15-25 million;<sup>14</sup> or dredging for mooring space of 2500-5000 acres of harbor bottom, at a probable public cost of \$2 billion;<sup>15</sup> Combinations of some of these facilities is the most likely alternative.

The least costly and most timely public means of providing public boating opportunities is through the public launching ramp. Also, the ramp provides opportunities for middle income, trailer boat owners who are increasing relative to other boat owners.<sup>16</sup> Marinas, which require as much as ramps both on land and water, are becoming increasingly expensive to develop and operate, and thus, the private sector is unlikely to meet all boating demand.<sup>17</sup> Also, dredging simply to provide mooring space has become prohibitively expensive.

Certainly, combinations of the three alternatives can serve the different regions in varying degrees of efficiency. For example, many harbor masters feel that their harbors are under-utilized, particularly in Greater Boston and Mount Hope Bay.<sup>18</sup> In these areas, marinas may be needed as facilities which attract people and provide services. Conversely, launching ramps and/or dredging may be the only feasible alternative in critically crowded harbors. Nonetheless, construction of public access ramps is the least expensive and most efficient way of meeting boating demand in deficient areas. Since trailered boats cause traffic congestion, ramps are best sited in uncrowded areas.

#### SWIMMING AND BEACH USE

Preferred characteristics for swimming include undeveloped sandy shoreline, safe surf and currents, and parking and service facilities. Clean water, as defined by public health standards, is mandatory.

By far, swimming has higher participation rates than all other recreation, although its recent growth in participation is not as high as boating and fishing.<sup>19</sup> Since beach use and swimming provide so many people of all different income levels with inexpensive recreation, advocacy for open beaches or public ownership of beaches has been frequent. The Colonial Ordinance, which has been referred to in the Marine Environment Section, granted shoreline owners the land between the mean high and low water lines, but reserved for the public the rights to navigate, fish and fowl below the high water mark. In 1973, the Massachusetts Legislature asked the State Supreme Court for an opinion on whether these retained rights include walking as a lawful public use of the foreshore. The Court felt that such an interpretation was a taking without compensation and was thus unconstitutional. Responding to this decision, the Legislature's Special Commission Relative to the Management, Operation and Accessibility of Public Beaches stated in its final report: "Acquisition of rights by express dedication, acquisition or other such means is, in effect, the only way in which significant expansion of public beach resources will occur."<sup>20</sup>

Table 1 shows that 80% of the total demand for shoreline swimming is met but badly distributed -- there are only 250 miles of free or



fee charged beaches.<sup>21</sup> Furthermore, the absolute numbers still seeking opportunities for coastal swimming is still higher than for any other activity.

In order to meet unfulfilled demand, roughly 50 miles or from 100-10,000 acres of additional beach is needed.<sup>22</sup> (depending on whether "lineal" beach or major park beaches are developed). Some demand can also be met by substituting similar facilities, i.e., inland ponds and public pools instead of urban coastal beaches; although one survey indicates that ponds and pools cannot substitute for coastal beaches because of the special qualities of wind, waves and visual character of the shoreline.<sup>23</sup>

Along the Massachusetts shoreline, about 100 miles of undeveloped (without abutting residences) non-public sandy beach remain for possible addition to public supply.<sup>24</sup> Most of this beach is in small sections with about 5-10 sites suitable for large scale recreation facilities. Usually located away from population areas, these few large sites are located on Martha's Vineyard and Nantucket, in the Buzzards Bay region, and Cape Cod. The North and South Shores, and certainly Boston, have very few large undeveloped sandy beaches left.

Another alternative to meeting needs is to open "resident only" beaches to all; however, this change would probably lead to overcrowded conditions. The Special Commission concurs, stating that "although the Commission believes that such restrictions (residents only) are generally not lawful or appropriate, it recognizes that such remedial action (lifting of all restrictions) would prevent or discourage resident recreation, pose difficult municipal finance problems and, more generally, only spread traffic, parking and other such problems from (other beaches)."<sup>25</sup>

In short, beyond what can be gained through transportation improvements, there is not much flexibility in meeting existing beach needs. Small, well distributed sites are not only desirable because they pose fewer traffic, social and other environmental impacts, but they also offer the only possible long-term option for meeting beach demand in a shoreline as developed as Massachusetts, particularly in Boston Harbor, the North and South Shores. Similarly, expansion of existing facilities can alleviate deficiencies in some regions, particularly if transportation to them can be improved. Finally, large sites can be purchased on an as-available basis, e.g., surplus federal properties.

#### SALT WATER FISHING AND SHELLFISHING

Salt water fishing and shellfishing has relatively few requirements that differ from boating and swimming. However, fishing needs can also be met in more flexible ways than by boat or beach use. People can fish from piers, bridges or jetties if they are located near areas of suitable fish habitat -- places that might not be suitable for other forms of coastal recreation. Similarly, as mentioned before, Massachusetts law allows beach passage between mean low and high tide for "navigation, fishing and fowling"; thus opportunities are limited by lack of shore access points.<sup>26</sup>

Since the supply of fishing opportunities is difficult to estimate it is specious to argue that there are unmet needs. However, studies indicate that salt water fishing participation has increased nationally by 45% since 1960. The value of fish caught by salt water sportsfishermen in Massachusetts are estimated at nearly \$20 million.<sup>27</sup> Additionally, Massachusetts has higher amounts of fishing participation than the combined neighboring states of Maine, New Hampshire, and Rhode Island; fishermen in those states fish almost as frequently in Massachusetts as they do in their home states.<sup>28</sup>

Similarly, recreational shellfishing in Massachusetts coastal towns is increasing, bringing revenue from licenses, equipment and related expenditures. With over \$70 thousand spent on recreational shellfish licenses, and \$25 thousand spent on commercial licenses last year, access to productive coastal water is becoming more economically important to coastal towns.

Massachusetts salt water fishing is an increasing coastal activity which generates substantial income, and which makes further demands on coastal access. Alternatives for satisfying fishing demand include beach acquisition and construction or rehabilitation of usable piers for use by fishermen. Even the smallest access points along the coast are useful for fishermen. Thus highway and bridge projects, utilities, etc., can provide fishing opportunities at minimal expense.

#### OTHER OPPORTUNITIES AND CONSTRAINTS

This section explores combinations of coastal uses which together can enhance or degrade basic recreational experiences. For example, the tourist who is able to camp, swim and tour historic houses in the same area experiences more enjoyment than supply/demand statistics for individual activities illustrate. On the other hand, inappropriate combinations of activities, such as swimming or surf fishing occurring on the same beach can detract from the value of each individual activity. Although each conflict must be decided on a site-by-site basis, the location, proximity of activities to one another, and timing and seasonality of activities are important factors in planning for multiple uses. The following examples illustrate desirable multiple uses along the Massachusetts coast.

#### COMPLEMENTARY/MULTIPLE USES

##### Camping, Hiking and the Coastline

Campers and hikers require large areas for their trailers and tents, water supplies and sanitary facilities, and trails to lead them from camping areas to interesting destinations.

A system of coastal trails and campgrounds for hikers, bicyclists and equestrians would make more coast accessible to more people; could link population centers with recreational facilities; and would allow people to enjoy the wildlife resources and scenic qualities of the coastline. Near-shore coastal campgrounds could function as origins

for coastal recreation uses, and trails would provide links to the swimming, boating, and fishing on the shore.

The demand for camping is rapidly increasing: 55,000 more people camped in state campgrounds in July 1975 than in July 1974. Related activities are also increasing: the Bureau of Outdoor Recreation states that more recreation days in the Northeast are spent in bird watching and nature photography than in boating, fishing or camping; and that much of this activity occurs on the shoreline. Thus, activities which are not necessarily coastal also vie for the shoreline as a preferred location. Since the expense of shoreline acreage makes unlikely the expansion or acquisition of land solely for these types of activities, the multiple use of coastal land is essential. And limited acquisition such as trail development and easements becomes an inexpensive means to provide coastal access, join inland recreational sites, and increase opportunities for related recreation.

#### Tourism and the Coastline

The coastal zone attracts a large number of visitors who enjoy the swimming beaches, sailing, boating and fishing experiences the coast offers. Rolling dunes, a craggy rock ledge, expanses of blue water, and the sights and sounds of a busy fishing harbor are probably some of the first things that come to people's minds when they think of the coast. Its ability to soothe, to humble, to excite or just to pre-occupy makes the coast a primary tourist attraction.

The state's tourist industry sustains an estimated 74,000 full-time year-round jobs. Income attributed to tourism is estimated at \$1.2 billion annually.<sup>30</sup> The coast accounts for most of the jobs and much of the state's tourist income. For example, 56% of the state's hotels, motels, trailer parks, and campgrounds are located along the coast (excluding those in Boston).<sup>31</sup> Additionally, two of the most obviously coastal regions, Cape Cod and Martha's Vineyard, attribute 75% and 95% of their respective Gross National Products (GNP's) to the tourist industry.

Maintaining a healthy tourist industry, which for some regions is the primary source of income for residents, requires a continuing effort to provide the recreational facilities tourists demand -- swimming beaches, fishing and boating opportunities -- and to preserve those aspects of the coast's visual environment which serve to attract tourists.

#### Other Multiple Uses

Many other coastal uses can also coexist with recreation. For example, public utility rights-of-way can be used to provide access for shore fishing; institutions can provide access for general recreation and tourism; and port operations can serve as exciting focal points for sightseeing. The seasonal differences in Massachusetts also offer possibilities for multiple uses: parking lots at marinas can provide winter storage for boats; beaches used by swimmers in the summer can be used as campgrounds in the fall; tourist hotels can change to winter convention centers.

## CONFLICTING USES AND ENVIRONMENTAL IMPACTS

Conflicting uses and adverse environmental impacts stem from inappropriate intensity and mixing of incompatible uses. Conflicts result from physical competition for space, psychological incompatibility, and destruction of resource-related values. Conflicts, if allowed to continue unmanaged, may result in reduced health and safety and in deterioration of environmental and recreational qualities. Examples of such coastal conflicts include: boating (bacterial waste, danger) impact on swimming; boating (speed, wake, noise) impact on fishing; beach use with car (noise, visual) impact on adjacent private properties.

Resolution of some conflicts are often possible only through prohibition of one or more activities, as suggested in the Marine Environment Section of this chapter. Since the demand for recreation is apparently unlimited, while the resources are mainly fixed, the future need to prohibit or condition recreation uses will become more prevalent.

Policies throughout this chapter reflect the need to balance recreation demands with other coastal uses and with the conservation of natural resources. Potential impacts of recreation which the Marine Environment Section examines in detail are summarized below:

### Boating:

- motors contribute to oil pollution and stir bottom sediments
- motors disturb quietude
- wakes may cause shoreline erosion
- boat toilets may pollute water
- trailerd boats may cause traffic congestion
- shoreline facilities may need fill, bulkheading, wharves
- dredging may pollute ambient water
- boating may conflict with water borne commerce or other coastal recreational activities

### Swimming and Beach Use:

- pedestrians or beach vehicles may destroy beach vegetation resulting in weakening of beach structure
- beaches may need fill or erosion protection works which may cause harmful changes in littoral drift of sand
- onshore facilities such as parking lots may cause run-off or surface pollutants
- onshore traffic may overload roads and cause congestion
- beach uses will probably conflict with one another

### Fishing:

- fishing from boats may cause impacts cited under boating
- fishing from beaches will conflict with swimming

### Camping:

- camping may destroy vegetation resulting in weakening of beach structure or upland areas
- camping may compact soils causing run-off of surface water and eventual erosion
- camping may cause temporary traffic congestion on local roads

However, these conflicts and potential environmental degradation can be minimized through technical solutions, land use planning and management. Conflicts that are between the operational aspects of each activity, i.e., where equipment and space needs conflict or the speed or intensity of the activities conflict, may be resolved through reduction of speed, separation of spaces, etc. Conflicts that are in timing, seasonality and sequencing, i.e., where uses are incompatible at different times of the day or season, may be resolved through separating uses in time rather than space. Conflicts may also be resolved through minor management rules, e.g., leashing of dogs or other administrative and policing solutions. Finally, conflicts and environmental problems can also be resolved through improved maintenance.

### MAINTENANCE AND PRICING

Throughout regional Coastal Zone Management public meetings, citizens cited maintenance of recreation areas and lack of facilities as major concerns.

While federal or state funds frequently support local acquisitions, once the community acquires an area, its maintenance is borne by or charged to the town. This practice partly accounts for frequent charging of fees to out-of-town residents.

Maintenance expenditures are not small. Last year the Department of Environmental Management spent \$775,000 for the operation of its beaches (vs. \$435,000 in revenue) and \$3.8 million for parks (vs. \$992,000 in revenue).<sup>32</sup> Maintenance cost problems are serious enough that the Special Legislative Commission, in recommending legislation to prohibit non-resident discrimination at beaches, consciously exempted pricing differentials: "at municipal beaches where the municipality uses tax revenues to maintain and operate the beach facilities, and the fee differential reflects an adjustment in charges that effectively equalized resident and non-resident daily use payments."<sup>33</sup>

If communities are not allowed to recover tax funded maintenance expenses through differential pricing, town residents would either be subsidizing out-of-town users, or might not be able to maintain beaches adequately. Adequate maintenance is important because it increases the capability of resources to support greater use. Thus, where a differential in access fee is necessary to cover maintenance, the well-maintained facility warrants the higher fee.

Thus, supplying recreation is complicated by the need for maintenance. Maintenance costs soon exceed the acquisition costs and the user does not necessarily bear these costs through fee charges. Poor maintenance diminishes the quality of the recreation and causes antagonism in the host community. However, the benefits of increased maintenance are substantial, especially in urban areas where, because of limitations on physical expansion, increased maintenance is the only means to increase use.

## OBJECTIVES

The foregoing discussion suggests that CZM's recreation program should be designed to achieve the following objectives:

1. To improve the quantity and quality of coastal recreational opportunities for all citizens of the Commonwealth.
2. To improve public access to coastal recreation resources.
3. To ensure that conflicts between recreation and other coastal activities are minimized, and coastal resources are not over-utilized or degraded.
4. To involve citizens and user groups in the further planning, development and management of public coastal recreational facilities.
5. To suggest, initiate and conduct research into areas of special needs for coastal recreation and to develop management standards and criteria for utilization in public recreational facilities and areas.
6. To promote tourism where appropriate and desired through the provision, improvement, and diversification of coastal recreational amenities.

## CZM POLICIES AND PROGRAM RECOMMENDATIONS

Policy (21) Improve public access to coastal recreation facilities, and alleviate auto traffic and parking problems through improvements in public transportation

Because some existing coastal recreation sites are underutilized and/or badly distributed, or because resistance by coastal communities to an increase in recreation on the coast is often based on undesirable auto traffic impacts, CZM believes that solving transportation access problems is the first step to improving coastal recreation opportunities. Thus, CZM will work to facilitate buses, boats or alternative public transportation from: (a) central points within regions to near-by coastal recreation facilities, e.g., from town centers to beaches or from Boston to the Harbor Islands, and/or (b) urban or inland areas directly to more remote coastal recreation facilities, e.g., from Boston to the National Seashore. In addition, CZM will work with relevant transportation agencies to facilitate bus service from the same distribution points to inland recreation in order to reduce pressure on the shoreline.

To encourage ridership, public transportation should be designed to fit recreationalists' needs, e.g., buses which carry bicycles. Where public transportation is developed in near shore areas, closing

roads or regulating auto traffic will also improve the alternatives and use of the public transportation.

CZM will support access improvements, both demonstration and permanent solutions, to existing recreation areas where increased use can be sustained without degradation of significant resource areas cited in Marine Environment Policy (1) and when:

- (1) Existing transportation is inadequate, especially where there are traffic problems or related environmental impacts; or
- (2) the area is state or federally owned, since potential impacts from increased use can be more easily managed on public land; or
- (3) the area is underutilized based on a ratio of parking to amounts of sandy beach and adequate public facilities, rest rooms, etc., can be provided to support the increased use; or
- (4) benefits from public transportation to recreation might spill over into increased town commerce, tourism; or
- (5) public transportation investments can service many recreation areas near each other.

#### IMPLEMENTATION

Coastal Zone Management will participate actively in the transportation planning process in order to propose and advocate projects which further CZM objectives in recreation development. CZM will work with the Executive Office of Transportation, its agencies, Regional Planning Agencies, Transit Authorities, community officials, or other relevant members of the various Transportation Planning Advisory Groups to ensure that projects in accordance with CZM policies receive a high priority in the state's transportation plans - Transportation Improvement Plan (TIP) covering a period of three to five years, and on the Annual Element (AE) for each year. Such plans must be endorsed by the Metropolitan Planning Organization (MPO) for each area and subsequently submitted to the state Department of Public Works for highway projects or to the Urban Mass Transportation Authority (UMTA) for transit projects.

Whereas transit projects will generally receive a high priority vis-a-vis CZM policies, CZM will advocate a lower priority for major new roads or expansions in coastal areas, particularly where traffic impacts at final destination points will be aggravated. Additionally, CZM will provide funds to co-sponsor demonstration projects with UMTA in order to explore recreation related transit possibilities.

Where CZM objectives are seriously jeopardized by federally funded projects which were not modified or conditioned during the early planning stages, CZM will exercise "federal consistency requirements" to ensure that CZM concerns are adequately addressed.

--Executive Office of Transportation and Construction, and the



Bureau of Transportation, Planning and Development (BTP&D) of the Department of Public Works comprise the state arm of transportation planning and development. Under the Executive Office, the BTP&D implements the 3C Transportation Planning Program established by the Federal Highway Act of 1962 and the Urban Mass Transportation Act of 1974. CZM will coordinate inter-agency policies on recreation and transportation through the various Transportation Planning Advisory Groups, of which EOTC and DPW are members. CZM will also review planning priorities during the "corridor planning" stage which is the earliest planning phase of BTP&D.

--Urban Mass Transportation Administration (UMTA) under the U.S. Department of Transportation, grants and loans to states for transit planning, development, and operation. Transit systems can provide inexpensive access to coastal recreation as well as reduce the traffic congestion and related impacts from automobile access. In order to qualify for transit funding, Massachusetts submits a Transportation Improvement Plan and Annual Element to UMTA which sets priorities for transit projects. CZM will work with community and regional planners, and transit authorities, to ensure that transit projects which serve CZM's recreation-related transportation policy are included.

--Federal Highway Administration (FHWA), also an agency of the Department of Transportation, is responsible for the administration of grant programs for upgrading and construction of a national system of highways. The FHWA funds the state DPW which reviews TIP's and AE's and allocates funding accordingly. As well as sponsoring and supporting transit projects in this work program, CZM will, through federal consistency (CZMA, Section 307), coordinate with FHWA to ensure that coastal road construction does not overload coastal recreation and intensify auto related impacts.

--Regional Planning Agencies and Transit Authorities are the primary authors of the state's Annual Work Programs. In producing the Work Programs, the RPA's are directed by the BTP&D to integrate transportation planning within a comprehensive framework and to show, specifically, the inter-relationship between RPA planning tasks and those performed under transportation planning. In this context, CZM will coordinate recreation, open space, and public transportation policies with RPA's by co-sponsoring project proposals to UMTA; to the National Parks Service for "Alternative Transportation Systems Research Program" grants, a program to fund demonstration projects for transportation within and to National Parks; and/or use CZM recreation planning funds to sponsor feasibility studies to evaluate public transportation projects to recreation facilities, particularly within Boston Harbor and to the National Seashore (discussed subsequently).

--A-95, NEPA, MEPA - In addition to sponsoring and/or helping fund recreation related transportation projects, CZM will review all proposed recreation projects, including town and state acquisitions, for explicit consideration and resolution of transportation and access alternatives, as well as traffic and circulation plans. CZM will use A-95, MEPA, and NEPA to review recreation projects and coastal transportation projects to ensure compliance with recreation-transportation policies cited above. Specifically, through "federal consistency provisions" of the CZMA (Section 307), and by reviewing projects under NEPA, CZM will coordinate with the U.S. Department of

Transportation (DOT) in "providing public access to recreation", a need felt to be in the national interest in the coastal zone. CZM will work with DOT to define more precisely how this goal can be attained.

--Additionally, CZM recommends changes in the state point evaluation system for outdoor recreation projects, promulgated under U.S. Bureau of Outdoor Recreation (BOR) guidelines, to reflect higher priority for proposals which demonstrate transportation improvements proposed in Policy (23). CZM will coordinate with the Division of Conservation Services to ensure that transportation and access alternatives have been considered and that the project would not generate significant traffic and noise problems and related environmental impacts.

Policy (22) Link existing coastal recreation sites to each other or to nearby coastal inland facilities via trails for bicyclists, hikers, and equestrians, and via rivers for boaters.

To relieve some transportation access problems, CZM finds that many existing coastal recreation facilities can be linked by trails to both improve recreation access and enhance the overall recreation experience. Potential sites which would most successfully meet the following criteria should be given highest priority for trail development:

- 1) Access would be provided to designated scenic rivers or roads, Areas for Preservation or Restoration, or other visually important significant resource areas.
- 2) A number of recreational sites would be linked and the trail would serve a region-wide public.
- 3) Historic sites on or eligible for the National Register of Historic Places would be located on the trail.
- 4) Linkage to public transportation would be possible.
- 5) Resource capabilities could sustain continued trail use without degradation of environmental quality.

#### IMPLEMENTATION

The Massachusetts coastline has many abandoned rail beds, scenic roads, and other rights-of-way which could be developed into trails to link recreational sites and provide additional passive recreation opportunities. In most cases such trails will include improvements such as easement acquisition, paving, fences, landscaping, clearing, etc. Thus, aggressive development of trails would require significant financial investment. Purchase of trail easements will be given a high priority under Section 315 funds of the Coastal Zone Management Act. CZM will also solicit aid from the Department of Public Works to make improvements where such trails are along side roads, over bridges, etc., and from DEM, MDC, or communities who will manage or share the benefits of the proposed trails. Trails should be developed in conjunction with either designated or potentially designated easements

such as scenic roads or rivers, which should be concomitantly implemented. The uses of such trails should be compatible with the intent of the designation.

--Coastal Zone Management Act Amendments, 1976, Section 315 authorize 50% grants to states for the costs of acquiring access to public beaches and other coastal areas of environmental, recreation, historical, esthetic, ecological or cultural value. Massachusetts CZM will give high priority to the use of Section 315 funds for the purchase of trail easements that provide access to sites which meet the criteria of this policy. Such funds can either be expended at the state level or disbursed to communities.

--Land and Water Conservation Fund (P.L. 88-578) provides funds for the acquisition of active outdoor recreation lands for federally administered recreation areas; and matching grants for state recreation planning, and state and local land acquisition and development. The fund, which is administered by the Bureau of Outdoor Recreation of the Department of the Interior, is distributed through the Massachusetts Executive Office of Environmental Affairs. The Bureau of Outdoor Recreation has developed a posture on recreation in the coastal zone, basing its position on the following objectives: (a) recreation should be equal to all other coastal uses; (b) recreation should deserve equal consideration in planning and development; (c) acquisition of additional shoreline lands should be held in perpetuity for conservation, recreation, and compatible purposes should be given top priority by all land management agencies; and (d) the right of public access to coastal areas should be protected. In context of the BOR desire to secure access to coastal recreation, CZM will coordinate with the Massachusetts Division of Conservation Services and the Department of Environmental Management to ensure that high priority be given to improvements of trail access and easements to coastal recreation.

--Self-Help Program, also administered by the Division of Conservation Services, Executive Office of Environmental Affairs, provides up to 50% reimbursement to communities for the acquisition of conservation or passive recreation land. CZM will work with Conservation Services to ensure that small scale trail access to existing conservation lands be given high priority among Self-Help projects.

--In addition to the purchase of trail easements, CZM recommends implementation of this policy through the designation of scenic corridors which can afford protection of the scenic quality of access routes and enhance the actual journey to the recreational site. Programs for such designation include:

--Scenic Rivers Program (MGLA Ch. 21, S.17b), administered by the Department of Environmental Management of the Executive Office of Environmental Affairs, provides for the management of rivers for scenic and recreational purposes. Where such rivers exist in the coastal zone, CZM will recommend designation and management guidelines for ensuring continued unspoiled recreation opportunities as well as boat access to coastal waters (refer to the Visual Environment section for further discussion of guidelines). In addition, CZM will work with DEM to provide technical assistance to communities who wish to make such designations.

--Scenic Roads Program (MGLA Ch. 40, S.-15C) enables planning boards to restrict the removal of vegetation and stone walls on designated local roads. CZM will recommend designation of scenic roads which can complement other trails in a coastal trail system.

--Bikeways Program, administered by the Department of Public Works, provides funds for off-road construction of separated bike paths. Criteria for bikeways planning include: improved safety and circulation for road users, access to major trip generators, integration with existing bikeways systems, and coordination with transportation and land use plans of other regional and state agencies. CZM will work with DPW and communities to recommend sites for bikeway development in the coastal zone. Bikeways development will be coordinated with future public transit improvements discussed in the first policy of this section.

Policy (23) Increase capacity of existing recreation areas by facilitating the multiple use of the site and by improving management, maintenance and public support facilities. Resolve conflicting uses whenever possible through improved management rather than through exclusion of uses.

Many recreation sites, if managed more efficiently, could accommodate more and different uses without much change in physical characteristics. CZM intends to promote expanded use when:

1. Opportunities for physical expansion are limited; or
2. The operational aspects of activities do not conflict, e.g., picknicking, and sunbathing; or
3. Improved management and maintenance can control operational conflicts between uses; or
4. The seasonality of the activities facilitates multiple use sequencing; or
5. Recreational use of non-recreational areas can be accommodated on weekends; or
6. Improvements in water quality provide expanded opportunities for water contact sports; and
7. Where there is adequate access for additional uses to benefit from such improvements; and
8. Resources are capable of supporting increased use without degradation.

#### IMPLEMENTATION

In order to maximize benefits which can result from more efficient use of existing recreation sites, CZM will (a) seek and provide technical assistance to design areas for multiple use and (b) ensure that funds for maintenance are made available and used effectively to work

with other state, federal and local agencies whose programs provide opportunities for multiple use recreation; e.g., fishing walkways on bridges over estuaries, launching ramps on roads which abut water, public walkways in urban renewal areas. In order to secure more funding for maintenance, CZM will exercise "federal consistency" over the allocation of Bureau of Outdoor Recreation funds in order to ensure that some money from each proposed coastal project is allotted for maintenance.

If federal and state sources are found to be inadequate to provide necessary funds for maintenance, CZM will work with the Department of Environmental Management and local officials to develop pricing schemes for public recreation that produce revenues sufficient to cover operating expenses. Furthermore, in situations where local tax revenues are used to supplement operating costs of recreation facilities, CZM will support and work with local officials to create price schemes that require higher charges for non-taxpayers.

--Coastal Zone Management Act Amendments, 1976, Section 305(b) (Funding for Planning) will be extended by the federal Office of Coastal Zone Management during 1977-78. The extended funding is intended "to give specific emphasis and support for these (recreation) areas." CZM will use this planning money to analyze specific recreation problems; the design of multiple use concepts and application is a high priority for this funding.

--Department of Housing and Urban Development provides, under the Housing and Community Development Act of 1974, direct grants to state, metropolitan, and regional planning agencies for land use, housing, urban, and redevelopment planning. In addition, discretionary grants awarded to urban communities may be used for eliminating blight, conservation or expansion of housing and housing opportunities, increased public services, and improved use of land. CZM will support HUD grants demonstrating the potential and necessity for multiple recreation uses in waterfront renewal areas.

--Department of Public Works (MGLA Ch. 90) is authorized to construct, improve and maintain all non-federally funded roadways. In effect these include most urban and rural roads which do not provide direct access to a major population center or access between population centers within metropolitan areas. CZM will work with the DPW in order to encourage the construction of small recreation oriented improvements during normal maintenance of their roads, e.g., fishing walkways on bridges.

In addition to such demonstration grants, CZM will use the following funds to provide increased maintenance to support multiple use projects or high capacity use of existing areas:

--Coastal Zone Management Act Amendments, 1976, Section 315, although intended for acquisition purposes, may be able to be used for increased public facilities such as rest rooms. CZM will urge the Department of Commerce to allow use of this fund for such facilities in areas where no physical expansion alternatives are possible and recreation needs are high.

## Metropolitan District Commission (MDC)

The MDC acquires, operates and maintains recreation facilities in the greater Boston Metropolitan area, from the coastal towns of Swampscott to Cohasset. Additionally, it owns several of the Harbor Islands which provide recreation potential for metropolitan residents. Therefore, coordination with the MDC is most important. CZM will explore with the MDC how CZM funds can be used to supplement their coastal recreation planning and funding activities.

--CZM will, through A-95 and MEPA review procedures, ensure that applications for acquisition of coastal recreation sites have appropriately indicated sources for maintenance funds, and that multiple use of the proposed facility has been explored. "User-fee" revenue for maintenance will be considered an appropriate source of maintenance funds.

Policy (24) Provide technical assistance to developers of private recreational facilities and sites that increase public access to the shoreline.

Demand for the kinds of recreation experiences enjoyed on the coast is high; the facilities and sites required to provide these experiences are coastally dependent. Many of the facilities have adverse impacts on the marine environment. Yet, if Massachusetts is to allow the public to enjoy the benefits of a productive marine environment and visually pleasing coastal zone, both public and private means of securing general public access to the shore should be encouraged.

## IMPLEMENTATION

CZM's Marine Environment policies (see Policy #1 for detailed wording) specifically exempt certain types and amounts of recreation facilities from restrictions placed on salt marshes, dune areas, sandy beaches, and barrier beaches. For example, the construction of boat ramps is permitted in some of these significant resource areas, provided associated parking facilities are built at higher elevations in less sensitive areas away from the waterfront. Marinas are also permitted, provided their wharves or piers are built on pilings, allowing the free flow of the tide and the maintenance of existing circulation patterns. Further, dredging is permitted, subject to the conditions specified in Policy (1) and the priority criteria specified in Policy (18). Conditioning construction to minimize adverse environmental impacts will necessitate more sophisticated planning and design by private developers. Therefore, CZM will prepare a design and construction practice handbook to assist private developers in designing, constructing and operating marinas, beaches, boat ramps, and other recreational facilities consistent with CZM's Marine Environment, Coastal Hazards, Visual Environment, and Ports and Harbors policies. CZM will also offer technical assistance to municipalities to identify appropriate boating facility sites, develop harbor master plans, or provide other incentives to encourage private boating facility development. (See Ports and Harbors, Policies 18 and 19). Such assistance will be provided, in particular, where facility needs are high or where it can be demonstrated that a marina will help to

revitalize a developed harbor. Furthermore, the CZM federal consistency process will be used to streamline the Corps of Engineers and Waterways permitting process by facilitating joint review and hearings by the two agencies of proposed projects. Moreover, in developed harbors CZM will work with the Waterways Program so that maintenance dredging licenses are valid for five years.

Policy (25) Expand the physical size of existing state or local recreation facilities in regions with a high need.

Every region of the Massachusetts coast is deficient in various types of recreation. Although all recreation needs will probably never be met, both because of environmental degradation and high costs of acquisition, development and maintenance, some regions are critically deficient, and opportunities are dwindling. CZM's first priority is to improve transportation to and maintenance of existing facilities. Where those policies are not sufficient to improve recreation with areas of high need, CZM will provide funds for acquisition of new land.

"High need" areas are represented in Table 1 of this section and are based on a demand/supply ratio of recreation facilities. Further specification of high need is incorporated in the site evaluation scheme developed by the U.S. Bureau of Outdoor Recreation for the Land and Water Conservation Fund used for recreation purchases. Generally, the evaluation favors areas with high density population, low recreation land area, low financial ability to make purchases, and above all, the quality of the proposed site and project.

Consistent with the above criteria, CZM favors expansion of existing areas when:

1. Undeveloped areas abutting or near existing recreation sites are suitable for expansion; or
2. Existing sites are over-utilized and there is no nearby substitute which might shift demand for the activity; or
3. Other public improvements have been made or are proposed on/near existing recreation sites; for example, where state or federal funding has been used to slow or prevent erosion of beaches; and
4. Access, including transit, roads and parking, is sufficient or will be sufficient subsequent to implementation of transportation improvements under Policy (21).

#### IMPLEMENTATION

CZM will provide funds for site expansions at a generally higher priority than new acquisitions. Expansions are a higher priority because the detrimental impacts associated with the expansion will generally be less than disturbing previously untouched areas. However, such expansions must be consistent with Marine Environment policies of this plan.

--Coastal Zone Management Act Amendments, 1976, Section 315, as previously discussed, provides states with funds for recreation acquisition. Similar to trail easement acquisition, CZM will give high priority to using Section 315 funding for small expansions which improve existing recreation sites' capacity.

Policy (26) Acquire and develop new sites in conjunction with transportation improvements and at a scale compatible with the social and environmental characteristics of the surrounding community(ies). Give highest priority to areas with a high need and few remaining opportunities.

The acquisition of completely new sites is a complex process in all areas of the Massachusetts coastal zone: in urban areas there is usually not adequate land or conditions suitable for new sites; in suburban areas community opposition is high because the residential character can be severely impacted by increase in traffic, people and ancillary services; and in rural areas the natural undisturbed environment may be severely impacted by increased use. However, after transportation, expansion, and maintenance policies have been implemented, sites must still be acquired in order to satisfy the growing demand for recreation.

In order to minimize such impacts, a formal committee comprised of communities affected by the proposed purchase and relevant state agencies will be convened to discuss and resolve the following issues:

- the "need" for the acquisition as defined in the text and the previous policy of this section.
- traffic and site environmental impacts.
- social and economic impacts on the surrounding community(ies).
- alternatives in terms of expanding other sites; acquiring more, smaller sites in conjunction with trails; different available locations.

#### IMPLEMENTATION

Acquisitions which are recommended in the Regional Chapter and which are consistent with this policy are listed at the end of the Recreation section.

CZM will itself fund or encourage funding through the Department of Environmental Management for the acquisition of new recreation sites of highest quality in areas with highest need. If, after consultation with communities, it is determined the site can sustain intensive use; Land and Water Conservation funding should be used for acquisition and development. Conversely, if passive use of the area is more appropriate, the Self-Help fund under Conservation Services should be used. Both funds are administered through the Executive Office of Environmental Affairs. Areas for Preservation or Restoration will have unique characteristics and pristine environments, and as such will be purchased where necessary with Self-Help funds in order to allow citizens to enjoy passive recreation opportunities. Priorities for active recreation in areas of high need (as previously described) are:



1. Swimming and beach use: Highest priority for small dispersed sandy beaches and beach easements in swimming deficient regions. In disbursing recreation funds, beaches for swimming will have highest priority for acquisition since they generate the highest recreation use.
2. Boating: Highest priority for the expenditure of state funds on boat ramps. State funds for dredging new mooring basins should not be used to meet recreation boating needs except: where it is the only feasible alternative for resolving conflicts between recreational boating and commercial fishing; where a region-wide boating public is serviced; and where navigation will be improved (see Ports and Harbors, Policy (20)).
3. Fishing and shellfishing: High priority for special easements, piers, landings and other access in conjunction with other recreation acquisitions or public improvements making full use of multiple use concepts.
4. Camping and hiking: High priority for inland sites in conjunction with transportation policies to provide near shore camping. Acquire easements for hikers and bicyclists to travel between existing/future inland sites and shoreline recreation.

Using special recreation planning funds during the first year of management, CZM will further refine site and activity specific criteria for evaluating the potential sites for new acquisitions. Using the above guidelines, as well as the design handbooks previously mentioned, CZM will work with local governments to acquire sites under the following programs:

--Coastal Zone Management Act Amendments, 1976, Section 315, as previously discussed, makes funds available for the purchase of coastal recreation sites. Since CZM will also use this fund for expanding existing sites, thereby reducing it significantly, CZM will allocate funds to purchase new sites on a very selective basis in the most deficient regions. CZM will also advocate that this fund be used as "match" with the following funds:

-Self-Help Fund, as administered through Conservation Services, Executive Office of Environmental Affairs, will also be used in part to purchase coastal sites. It is appropriate that this fund be used to purchase the few remaining large sites, particularly military and other government surplus property that becomes available.

-Public Access Board (MGLA Ch. 21, S. 17, 17A) is empowered to acquire access to great ponds and other waters within the Commonwealth and develop trails and related facilities for hiking, skiing and other uses. CZM will recommend easements for Public Access Board acquisitions which provide access to coastal waters and link existing recreational sites. Additionally, a representative from the Coastal Zone Management Program should be appointed to the Public Access Board in order to ensure implementation of this CZM policy.

Policy (27) Review developments proposed near existing public recreation sites in order to encourage minimization of their potential adverse impacts.

Since demand for recreation is currently unfulfilled, and since the availability and cost of land precludes the acquisition of many new sites, existing recreation sites are extremely valuable. They need added protection to ensure continued high quality recreation. Developments and projects which abut recreation sites, either onshore or offshore, can create adverse environmental impacts on the recreation site. Examples of their impacts are: increased traffic congestion on access roads; obstruction or limiting of public access; water pollution; degradation of the recreation experience through change in site character, air pollution, and noise.

As discussed in other sections of Chapter 2 (Ports and Harbors, Visual Environment, Guiding Coastal Development Through Public Investment), high quality recreation sites can stimulate and serve as an economic benefit to nearby development. In order to maintain this beneficial relationship between public recreation sites and abutting developments, potential impacts must be controlled. Thus, during project design and construction, potential impacts should be evaluated and mitigation measures should be employed, such as those listed below:

--Establishment of setbacks: Setbacks of the proposed development ensures that surface runoff will be adequately purified or reduced before reaching the recreation site; flood dangers will also be reduced. Setbacks provide more privacy and reduce noise for users of both the proposed development and recreation site.

--Establishment of buffers: Vegetative or structural buffers serve a purpose similar to setbacks, ensuring privacy, reducing noise and separating the impacts of the activities. However, buffers may also reduce the views from the land to the water.

--Technical solutions: Mechanical solutions such as sediment filters and traps, water treatment, erosion control projects, extended sewer outfalls, etc., can minimize the impacts of proposed developments. Some construction problems can be improved only through such mechanical means. (See Marine Environment, Policies (3) and (4)).

--Site design: Good site design can have effects similar to the creation of buffers and setbacks. Site design which is insensitive to nearby recreation areas can block sunlight, cause wind and temperature changes, block views, and change the character of the area. Developments must be designed and located on the proposed site to minimize such impacts on nearby recreation facilities and activities.

IMPLEMENTATION

CZM will review development projects proposed near existing public recreation sites in order to encourage minimization of potential adverse impacts. Where impacts cannot be avoided through exercise of this review process, CZM will consider funding the purchase of easements, certain development rights, or advocating "land swaps" in order to bring about the desired results.

--Massachusetts Environmental Policy Act (MEPA) (MGLA, Ch. 30, SS. 61 and 62) establishes an environmental review process for state actions, projects with state funding contributions, or projects requiring permits or licenses from state agencies. The intent of MEPA is to improve environmental planning and the design of activities so that they minimize damage to the natural environment, but not necessarily to stop them. Under the MEPA regulations, smaller projects are exempt from the reporting and review requirements. The MEPA statute directs all agencies of the Commonwealth to "review, evaluate, and determine the impact on the natural environment of all works, projects, or activities conducted by them" and "to use all practical means and measures to minimize damage to the environment." Thus, all public projects that are not specifically exempt from MEPA will be reviewed to insure consistency with this policy.

CZM will also review, through the Massachusetts Environmental Policy Act, all proposed developments near existing public recreation sites (see list of these sites at end of this section) to ensure that they do not adversely impact the recreation facility. All federal and state actions and private actions requiring a state permit that have an adverse impact on recreation facilities will be deemed inconsistent with the CZM program. After review under MEPA, such projects will be appropriately conditioned or denied if they have an adverse impact on recreation sites.

For major, publicly funded projects, depending on their magnitude and location relative to existing recreation sites, CZM staff will solicit the assistance of a design review board composed of experts in the appropriate fields (see Visual Environment, Policy (13)).

--Coastal Zone Management Act Amendments Section 315, as previously discussed, provides states with funds for acquisition of recreation areas. Where land purchases are necessary to protect existing public recreation sites, these funds will be used to purchase easements.

The list at the end of the Recreation section names the beaches to which Policy (27) applies.

#### TECHNICAL NOTES AND SOURCES

1. U.S. Bureau of Outdoor Recreation, Outdoor Recreation Trends, Washington, D.C.: U.S. Government Printing Office, 1967, pp. 20-24.
2. Department of Environmental Management, Executive Office of Environmental Affairs, State Comprehensive Outdoor Recreation Plan, Boston, Mass., 1976 Chapter VI.
3. New England River Basins Commission, Southeastern New England Study, Boston, Mass., 1975, p. 6-4.
4. MacConnell, W.P., University of Massachusetts, College of Food and Natural Resources, Twenty Years of Change, Amherst, Mass., 1973.
5. MacConnell, Ibid. With special analyses on shoreline land for Massachusetts Coastal Zone Office, Boston, Mass., 1975.
6. W. Robert Patterson, The New England Marine Industry: A Study of the Marine Manufacturing and Services Companies, N.E. Marine Resources Information Program and New England Aquarium, Boston, Mass., 1971, p. i.
7. John L. Compton and Robert B. Ditton, A Feasibility, Management and Economic Study of Marinas on the Texas Gulf Coast, Department of Recreation and Parks, Texas A & M University, Sea Grant, Texas, 1975, p. 8.
8. Patterson, Op. Cit., pp. 3-7, 3-8. Indicates multiplier factors of charter fishing and marinas as 3.08 and 2.76 respectively, ranging slightly under fish processing and higher than other marine manufacturing.
9. Compton and Ditton, Op. Cit.
10. Table 1 presents information from two sources. Demand for recreation activities has been extrapolated from the State Comprehensive Outdoor Recreation Plan. Calculated as "activity days" (defined as use of a facility period of time during a single day), this estimate for demand has been determined using economic information developed in ORRCC, modified by survey information developed in SCORP. Supply figures, also translated into activity days, have been developed from a specific CZM recreation inventory, i.e., for sites only in/near the shorelines. Space requirements for activity days are subsequently developed in the rest of the text.
11. Massachusetts Office of State Planning, Towards a State Growth Policy, Boston, Mass., 1975; and Massachusetts CZM, "Citizen Survey" Boston, Mass., 1976.

12. Special Legislative Commission, "Report Relative to the Management, Operation and Accessibility of Public Beaches Along the Seacoast", Boston, Mass., 1975, p. 31; cites traffic and parking problems stated at public hearings.
13. Calculations were developed from a Massachusetts CZM inventory of all coastal harbors and access ramps. Besides the major access ramps, there are over 100 additional small ramps which have been included under "marina slips and ramps;" over 60 of these small ramps are located in marinas on Cape Cod.
14. Calculations were based on the need for a five-fold increase in the amount of existing marinas or ramps in order to double total supply, as each currently provides 20% of the total boating supply. Assumptions for cost estimates include: \$0.5 million for construction, dredging and land acquisition of one marina; \$100,000 for major ramp construction and land acquisition for 10 parking spaces.
15. Calculations were based on assumptions that one acre of water at a depth of five feet was necessary to safely moor 15-20 small boats and dredging costs at approximately \$8./cubic yard. Therefore, dredging one acre to minimum depth would cost \$40,000; 5,000 acres would cost \$2 billion.
16. David A. Storey, The Massachusetts Marina Boatyard Industry, Massachusetts Agricultural Experiment Station, University of Massachusetts, Amherst, Mass., 1972-73.
17. According to the National Association of Engine and Boat Manufacturers in an article called "Shoreline Recreation Resources of the U.S.", boats purchased nationwide increased from 2,440,000 in 1947 to 8,025,000 in 1960, or an increase of 220%. Marina development in Massachusetts has not similarly increased. Twenty years (MacConnell, op cit) of land use change corroborates this finding.
18. This information is based on an informal Massachusetts CZM telephone survey of harbor masters. Opinions were solicited regarding maintenance problems, harbor capacity and conflicting uses. Almost 50% of the harbor masters felt that their harbors could sustain more use.
19. SCORP, Loc. Cit., p. V-61.
20. The Special Legislative Commission Relative to the Management, Operation and Accessibility of Public Beaches, "Third Interim Report", Chapter 40 of the Resolves of 1972, prepared by David Rice, Boston, Mass., August, 1975, p. 11.
21. The amount, ownership, and access information of Massachusetts beaches was developed based on previous inventories including New England River Basins Commission's SENE, the Special Legislative Commission report, as well as field checking and Citizen Advisory Committees' information and mapping.

22. Recreation beaches can be developed, at a minimum, as simple lineal access on sandy beaches, or at a maximum as major park beaches including parking, associated facilities, upland park, picnic tables, etc. Fifty miles of the latter type of recreation beach would require 10,000 acres, assuming 200 acres/mile of beach.
23. National Park Service, "Summary of Outdoor Recreation Activities in Preference of the Population Living in the Region of the Delaware Basin," prepared from report by Audience Research, Inc., Princeton, New Jersey, January, 1958. The report documents information from a poll that indicated that 48% of the respondents chose the New Jersey seashore for the most preferable day outing.
24. Beach and shoreline inventory, Loc. Cit.
25. Special Legislative Commission, Loc. Cit., p. 33.
26. See Opinion of the Justices, State of Massachusetts, 313 NE 2nd 561, 1974.
27. David G. Deuel, "1970 Salt Water Angling Survey," current fish statistics #6200, Statistics and Marketing News Division, National Marine Fisheries Service, Sandy Hook, New Jersey. SENE estimated \$20 million value, pp. 6-11. Estimate of value of sport fish caught from: personal communication with Christopher Mantzaris, National Marine Fisheries Service, Gloucester, Mass.
28. National Marine Fisheries Service, "Participation in Marine Recreation Fishing, N.E. US 1973-74", Department of Commerce, Washington, D.C. January, 1975, pp. 4-5.
29. Commonwealth of Massachusetts, Department of Environmental Management, Division of Forests and Parks. Based on inventory of tourism statistics.
30. Department of Hotel, Restaurant and Travel Administration, University of Massachusetts at Amherst, Research Report, The Economic Impact of Tourism on the Commonwealth of Massachusetts, prepared for the Massachusetts Department of Commerce and Development, December, 1974. Part-time or seasonal jobs are adjusted to full-time, year-round equivalents, e.g., two full-time 6 month jobs equal one full-time year round job. Income attributed to tourism includes both direct, indirect and induced expenditures.
31. Of the state's 1308 hotels, motels, trailer parks, and camps, 736 or 56% are located in the Counties of Barnstable, Bristol, Dukes, Essex, Plymouth, and Nantucket. U.S. Bureau of the Census, 1972 Census of Selected Service Industries, Massachusetts.
32. Extrapolated from budget information on parks and beaches for the State Massachusetts, Department of Environmental Management and Metropolitan District Commission.
33. Special Legislative Commission, Loc. Cit., p. 13.

TABLE II

BEACHES WITH PUBLIC ACCESS AND PARKING\* (i.e., to which Policy 27 applies)

Plum Island Beach and State Park	
Salisbury Beach State Reservation	Salisbury
Salisbury Beach	Salisbury
Crane Beach	Ipswich
Hodgkin's Cove	Gloucester
Wingaersheek Beach	Gloucester
Half Moon Beach	Gloucester
Pavilion Beach	Gloucester
Good Harbor Beach	Gloucester
Cressy Beach	Gloucester
White Beach	Gloucester
Pebbly Beach	Rockport
Back Beach	Rockport
Front Beach	Rockport
Forest River Park	Salem
Collins Cove	Salem
Beverly Harbor	Beverly
Obear Park	Beverly
Dane Street Beach	Beverly
Independence Park	Beverly
Juniper Cove Beach	Salem
Juniper Beach	Salem
Salem Willows Beach	Salem
Horse Shoe Beach	Salem
Porter River Beach	Danvers
Devereaux Beach	Marblehead
Riverhead Beach	Marblehead
Castle Park	Marblehead
Kings Beach	Lynn
Lynn Beach	Lynn
Nahant Beach	Nahant
Revere Beach	Revere
Short Beach	Winthrop
Winthrop Beach	Winthrop
Constitution Beach	Boston
Castle Island	Boston
Pleasure Bay	Boston
City Point	Boston
L Street Beach	Boston
Carson Beach	Boston
Malibu Beach	Boston
Tenean Beach	Boston
Orchard Beach	Quincy
Wollaston Beach	Quincy
Heron Road Beach	Quincy
Willows Beach	Quincy
Perry Beach	Quincy
Rhoda Street Beach	Quincy
Lower Germantown Beach	Quincy
Baker Beach	Quincy
Mound Street Beach	Quincy

\* Public parking defined as space for more than 25 cars.

BEACHES WITH PUBLIC ACCESS AND PARKING (cont. page 2)

Wessagusett Beach	Weymouth
Fort Point Beach	Weymouth
Hingham Bathing Beach	Hingham
Pemberton Beach	Hull
Bay Side Beach	Hull
Nantasket Beach	Hull
Gun Rock Beach	Hull
Brant Rock Beach	Marshfield
Green Harbor Beach	Marshfield
Duxbury Beach	Duxbury
Plum Hills Beach	Duxbury and Plymouth
Long Beach	Plymouth
Scusset Beach	Bourne
Bossetts Island	Bourne
Potuisset Beach	Bourne
Barlows Landing	Bourne
Monks Park	Bourne
Monument Beach	Bourne
Gray Gobles Beach	Bourne
Falmouth Beach	Falmouth
Old Silver Beach	Falmouth
Trunk River Beach	Falmouth
Menauhant Beach	Falmouth
Falmouth Heights Beach	Falmouth
Surf Drive Beach	Falmouth
Megonsett Beach	Falmouth and Bourne
Sandwich Beach	Sandwich
Sandy Neck Beach	Sandwich
South Cape Beach	Mashpee
Kalmus Park Beach	Barnstable
Keyes Memorial Beach	Barnstable
Coville Beach	Barnstable
Craigville Beach	Barnstable
Dowdes Beach	Barnstable
Englewood Beach	Yarmouth
Bay View Beach	Yarmouth
Colonial Acres Beach	Yarmouth
Grays Beach	Yarmouth
Chapin Memorial Beach	Yarmouth
Bass River Beach	Yarmouth
Parker's River Beach	Yarmouth
Seagull Beach	Yarmouth
Taunton Avenue Landing	Dennis
Dunes Road Landing	Dennis
Horse Foot Path Beach	Dennis
Bayview Road Beach	Dennis
Corporation Beach	Dennis
Cold Storage Beach	Dennis
Town Beach	Dennis
Sea Street Beach	Dennis
Glendon Beach	Dennis
Haigis Beach	Dennis



BEACHES WITH PUBLIC ACCESS AND PARKING (cont. pg. 3)

South Village Road Beach	Dennis
West Dennis Beach	Dennis
Scargo Lake Beach	Dennis
Harbor Road Beach	Dennis
Inman Road Beach	Dennis
Roycraft Parkway Beach	Dennis
Town Beach	Brewster
Paines Creek Beach	Brewster
Saints Landing	Brewster
Breakwater Beach	Brewster
Crosby Landing	Brewster
Ellis Landing	Brewster
Robbins Hill Beach	Brewster
Hanging Beach	Chatham
Ridgevale Beach	Chatham
Cockle Cove Beach	Chatham
Forest Beach	Chatham
Pleasant Street Beach	Chatham
Nauset Beach	Chatham
North Beach	Chatham
Holway Beach	Chatham
Harding Lane Beach	Chatham
Chatham Light Beach	Chatham
Oyster Pond Beach	Chatham
Harding Beach	Chatham
Red River Beach	Harwich
Banks Beach	Harwich
Earle Road Beach	Harwich
Skaket Beach	Orleans
Rock Harbor Beach	Orleans
Nauset Beach	Orleans
Rock Harbor Beach	Eastham
First Encounter Beach	Eastham
Short Life Beach	Eastham
Nauset Beach	Eastham
Nauset Lighthouse Beach	Eastham
Coast Guard Beach	Eastham
Boat Meadow	Eastham
Eastham Beach	Eastham
Indian Neck Beach	Eastham
Mayo's Beach	Eastham
Cahoon Hollow Beach	Eastham
White Crest Beach	Eastham
Lecount Hollow Beach	Eastham
Marconi Beach	Eastham
Corn Hill Beach	Truro
Ballston Beach	Truro
Great Hollow Beach	Truro
Head-of-the-Meadow Beach	Truro
Highland Beach	Truro
Longhook Beach	Truro
Herring Cove	Provincetown

BEACHES WITH PUBLIC ACCESS AND PARKING (cont. pg. 4)

Race Point Beach	Provincetown
South Beach	Edgartown
Oak Bluffs Town Beach	Oak Bluffs
Joseph Silva State Beach	Oak Bluffs and Edgartown
Cisco Beach	Nantucket
Jetties Beach	Nantucket
Madaket	Nantucket
South Beach	Nantucket
Surfside Beach	Nantucket
Sconset Beach	Nantucket
Swifts Beach	Wareham
Minot Forest Beach	Wareham
Little Harbor Beach	Wareham
Onset Beach	Wareham
West Island Beach	Fairhaven
Horseneck Beach	Westport
East Horseneck Beach	Westport
Apponagonsett Point Beach	Dartmouth
Jones Beach	Dartmouth
West Beach	New Bedford
East Beach	New Bedford
Lloyd Street Beach	New Bedford

TABLE III

SITES CONSISTENT WITH POLICY 26\*

I. Local acquisition financially supported by state and/or state allocated federal funds (CZM Act Section 315 Amendments providing acquisition funds, BOR, Self Help):

- 1) Chariff Property, Rockport
- 2) Knowlton Wharf and Field, Rockport
- 3) Halibut Point, Rockport
- 4) Long Wharf Gloucester
- 5) Downtown Gloucester Visitor's Park, Gloucester
- 6) Kernwood Park, Salem
- 7) West Beach, Beverly
- 8) Lynn Harbor Waterfront, Lynn
- 9) Forest River, Salem
- 10) Chelsea Naval Hospital Site, Chelsea
- 11) Belle Isle Marsh, Winthrop
- 12) East Boston Waterfront, East Boston
- 13) Charlestown Naval Shipyard Park Expansion, Charlestown
- 14) Mann Hill Beach, Scituate
- 15) Cohasset Harbor Boat Ramp and Parking Expansion, Cohasset
- 16) Blackman's Point, Marshfield
- 17) Green Harbor, Marshfield
- 18) Saquish Beach, Plymouth
- 19) Ah-de-na, Kingston
- 20) Ellisville Harbor, Plymouth
- 21) Access Points on Runnins River, Seekonk
- 22) Bicentennial Waterfront Park, Fall River
- 23) Land Adjacent to Assonet Bay, Berkley-Freetown
- 24) Access facilities to Long Beach, Wareham
- 25) Washburn Island, Mashpee
- 26) Popponesset Bay Beaches, Mashpee
- 27) Barrier Beach, Brewster
- 28) Lamberts Cove, West Tisbury
- 29) Tiah's Cove, Tisbury Great Pond, West Tisbury
- 30) Nantucket Water Access Points, Nantucket

II. State Acquisition:

- 1) Lynn Harbor Waterfront, Lynn
- 2) Chelsea Naval Hospital, Chelsea
- 3) Revere Beach Expansion, Revere
- 4) Boston Harbor Islands
- 5) Access Points on Palmer River, Swansea-Rehoboth
- 6) Boat Ramp on Lee River, Swansea
- 7) Expanded State Owned Rest Area, Route 24, Freetown
- 8) Access to Stoney Point Dike, Wareham
- 9) South Cape Beach, Mashpee
- 10) Elizabeth Islands, Dukes County

III. Potential Federal Surplus Land:

- 1) Coast Guard Station, Plum Island
- 2) Air Force Land, Fourth Cliff, Scituate
- 3) Thacher Island, Rockport

\* All these sites are discussed in the Regions Chapter (Volume II) or have been proposed for purchase.



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Energy

## ENERGY

### SUMMARY OF FINDINGS

The Massachusetts coastal zone plays a major role in fulfilling the energy requirements of the state--80% of the Commonwealth's energy facilities are currently located there. The coast accommodates sites for electric generating plants, gas facilities, marine terminals, and tank farms and could in the future be called upon to host a refinery, deepwater ports or offshore oil or gas related facilities and services.

Energy facilities are located in the coastal zone for basically three reasons: utilization of abundant water for cooling purposes; proximity to fuel supply; and accessibility to market areas. Some of these facilities are by their nature coastally dependent, that is their successful functioning in some way requires that they be sited on the coast. For others, inland locations may be possible but may entail increased costs to the industry and consumers and could have adverse environmental and social impacts associated with them.

Massachusetts is and will most likely remain dependent upon product oil brought in from outside Massachusetts. Roughly half of this oil comes from foreign nations, most of which, as with the majority of domestic oil, is brought into the state via coastal marine terminals. For the foreseeable future, these products will continue to arrive in conventional coastal tankers and be stored in oil tank farms. While Massachusetts most likely has sufficient marine terminal capacity to handle any projected increases in tanker traffic, additional oil storage facilities will in all likelihood be needed. CZM finds that in many instances ports which now host tank farms will be hard pressed to accommodate additional storage. Tank farms might, however, in certain cases, be economically sited in areas outside the coastal zone.

In addition to oil, natural gas has become a widely used fuel, due to its efficiency and clean burning characteristics. Because of a lack of domestic pipeline gas, the importation of liquefied natural gas (LNG) and feedstock for synthetic natural gas (SNG) through marine terminals has become important in supplying the energy needs of the state. Because of the economics and risks of transporting cryogenic gas, many gas storage and processing facilities must be located close to terminals and as such are more coastally dependent than many other energy facilities.

Currently two coastal power plants have the capacity to use coal to generate electricity. National energy policy is placing increased emphasis on substituting coal for oil use. In addition, the feasibility of extracting coal from the Narragansett Basin is being examined. These developments may lead to the increased use of coal in Massachusetts and the siting of coal storage and transportation facilities in the coastal zone.

The coast, in addition to providing sites for receiving and processing facilities, also provides sites for 21 electric power plants. Currently, beyond the construction of an additional nuclear power plant in Plymouth, Massachusetts, no new major facilities are being proposed for construction in coastal areas for the foreseeable future. This situation may change, however, due to a variety of factors: including primarily, increased energy demands and slippage in construction of plants planned for other New England areas.

Currently Massachusetts lacks any refinery capability, and proponents argue that a refinery might benefit the state's economy and stabilize energy supplies. A refinery may well require the construction of a deepwater port, so deep draft vessels could be used to import large quantities of crude oil for refining. Refineries have substantial land and water requirements which may preclude other uses if sited in coastal areas. It is possible to site refineries away from the coast and such locations should be carefully evaluated.

While deepwater ports would tend to reduce congestion and the frequency of tanker spills, the risks of very large spills would be higher. Though commonly associated with the importation of crude oil, a deepwater port could be used to deliver refined petroleum products, thus potentially reducing the need for near-shore, shallow draft tanker terminals.

The siting of energy and energy related facilities in coastal areas may be affected by the proposed sale of drilling rights to roughly one million acres of land in the North Atlantic Outer Continental Shelf (OCS) by the Department of the Interior, scheduled for sometime in 1977. If oil or gas is found, the Commonwealth might well experience development pressure from OCS related activity. OCS exploitation may result in development of pipeline landfalls, gas processing facilities, tank farms and distribution facilities. Other OCS related activities such as supply bases, pipe coating yards, and platform fabrication yards might also be proposed for the coastal zone.

The construction and operation of each of the above mentioned facilities must be undertaken within the context of the state's energy policy. This policy, established in the law creating the Energy Facility Siting Council, calls for the provision of a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. These three concerns must be weighed in considering whether or not to site additional facilities be they in the coastal zone or elsewhere. Every facility has associated with it certain positive impacts: the meeting of energy needs, increased employment and a secure source of energy to provide for economic development. On the other hand, primary environmental impacts include those associated with air and water quality; alteration of coastal ecosystems; and land use conflicts. Many of those environmental impacts are discussed in the Marine Environment and Ports and Harbors sections. Others are described in the text of this section.

Growth in the demand for energy is one of the dominant factors which will determine how many facilities must be constructed. Energy conservation may reduce the need to construct as many facilities. Experts indicate that Americans currently waste a significant amount of the energy produced. Methods by which energy can be conserved and used more efficiently include: the establishment of lighting and heating standards; use of energy conserving building and insulating materials; establishment of energy sensitive building codes; implementation of rate structures which encourage energy conservation and the promotion of state-wide energy conservation measures. Many of these have been incorporated in the energy conservation recommendations already made by the Massachusetts Energy Policy Office.

In conjunction with energy conservation and efficiency, the promotion of environmentally sound alternative forms of energy is necessary. The implementation of alternatives such as solar, wind, and solid waste energy recovery systems would reduce our dependence upon the more traditional fossil fuel and nuclear forms of energy. Such a reduction would result in the need to construct fewer energy facilities as we know them today. It is necessary of course to evaluate new forms of energy closely as well as to determine that we are not simply substituting one energy source for another with the same potential for environmental and social impacts.

In developing its energy policies the Massachusetts CZM program has recognized there will be a need for increased amounts of energy and that new facilities to meet these needs may be required. CZM has also recognized that the siting of energy facilities are in the national interest and as such require special consideration. The maintenance of utility service is without question in the public interest. Therefore all policies were designed to allow adequate service to be maintained. In sum, the CZM program recognizes there is a need for a rational allocation of coastal land for the siting and accommodation of energy needs, which minimizes impacts on the environment and is economically feasible.

#### ENERGY FACILITY NEEDS AND IMPACTS

The following sections deal with six types of energy facilities: oil terminals; tank farms; gas facilities; electric generating plants; refineries; and deepwater ports. Within each section, characteristics of existing facilities, potential future needs, siting parameters, and environmental impacts are described.

##### OIL TERMINALS

Of the roughly 600,000 barrels per day (BPD) of refined petroleum products consumed each day in Massachusetts more than 75% is off-loaded through petroleum terminals sited in the Massachusetts coastal zone.<sup>1</sup> The remaining petroleum requirements are met by (a) product pipelines from East Providence to Springfield and Worcester, and from New Haven to the Springfield area; (b) tank truck shipments from

terminals in Albany to western Massachusetts; (c) rail tank car shipments to the Connecticut Valley; and (d) tank truck shipments from terminals in Rhode Island to Southeastern Massachusetts.

Of the oil consumed in Massachusetts, 24% is used to fuel electric generating plants. The remainder is used for home heating, transportation, and commercial and industrial uses.<sup>2</sup>

In the Boston demand region (see map) over 85% of the oil is off-loaded in Boston and the principal terminals are located in Chelsea Creek, the Mystic River, South Boston, and the Town-Fore Rivers area. Secondary ports are Salem, Weymouth, and Danvers. The primary method of distribution from coastal points is by truck with a small percentage trans-shipped by barge. A portion of the oil received at the Mystic River is transported by pipeline to Waltham and the Lowell-Dracut area. Oil also enters the region by a pipeline from Fall River to Sherborn and Waltham.

The Providence demand region, which includes Southeastern Massachusetts and the Cape, is serviced through the ports of Providence, Fall River, New Bedford, and Sandwich. Distribution within the region is primarily by truck.

The primary requirements for an oil terminal are a protected harbor, waterfront land on a deep draft channel (30-40 feet), access to oil storage facilities, and access via a distribution network (i.e., pipeline, highway or rail) to users of petroleum products.

While the terminal itself and a moderate amount of storage capacity for trans-shipment and surge storage is legitimately coastally dependent, the bulk of the oil storage traditionally associated with terminals is not.<sup>3</sup> Oil storage of this nature, used primarily for seasonal storage of heating fuel and to maintain a constant market supply, is discussed in the section on tank farms.

Existing channel depths limit the size of tankers and barges currently serving Massachusetts ports to the 25,000 to 60,000 dead weight ton (DWT) class. Extensive dredging or the construction of a deepwater port would be required to accommodate tankers of a larger size.

The number of tankers arriving in Massachusetts ports will depend on the magnitude of future petroleum consumption. Assuming successful conservation efforts, petroleum consumption may grow by only 15% by 1990. If, on the other hand, historic growth rates are assumed, petroleum consumption is projected to rise by 100% to 1.2 million barrels daily.<sup>4</sup> In either case, the state will see a corresponding rise in tanker traffic.

These projected demands will not, in all likelihood, require additional berthing capacity, since the average tanker berth occupancy rate is roughly 16% for New England as a whole. Boston's occupancy rate is approximately 23%. Thus even with high growth in petroleum consumption, no new berthing capacity would be needed until after year 2000.<sup>5</sup> The increase in tanker traffic may, however, cause congestion in ports and



# PETROLEUM

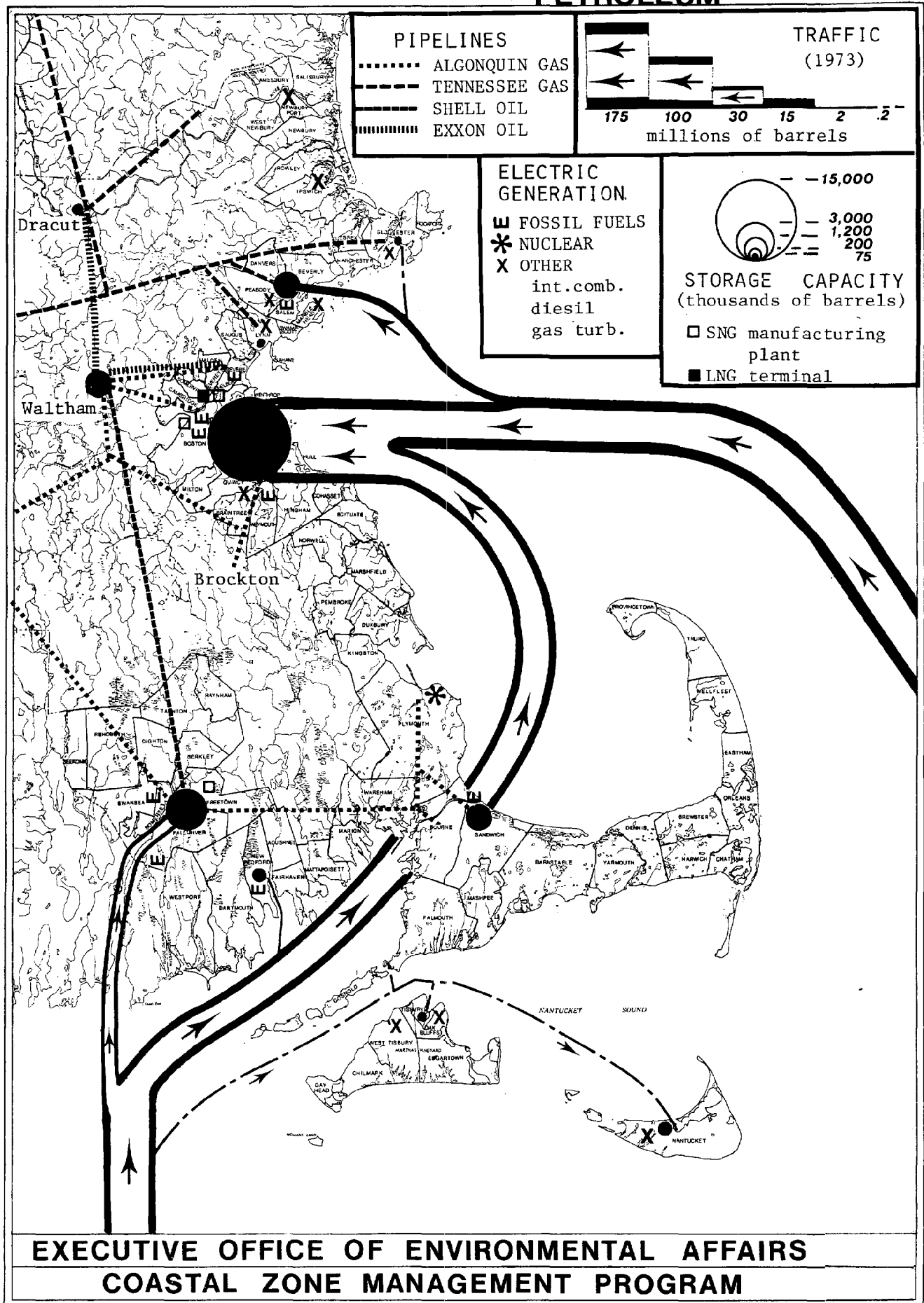
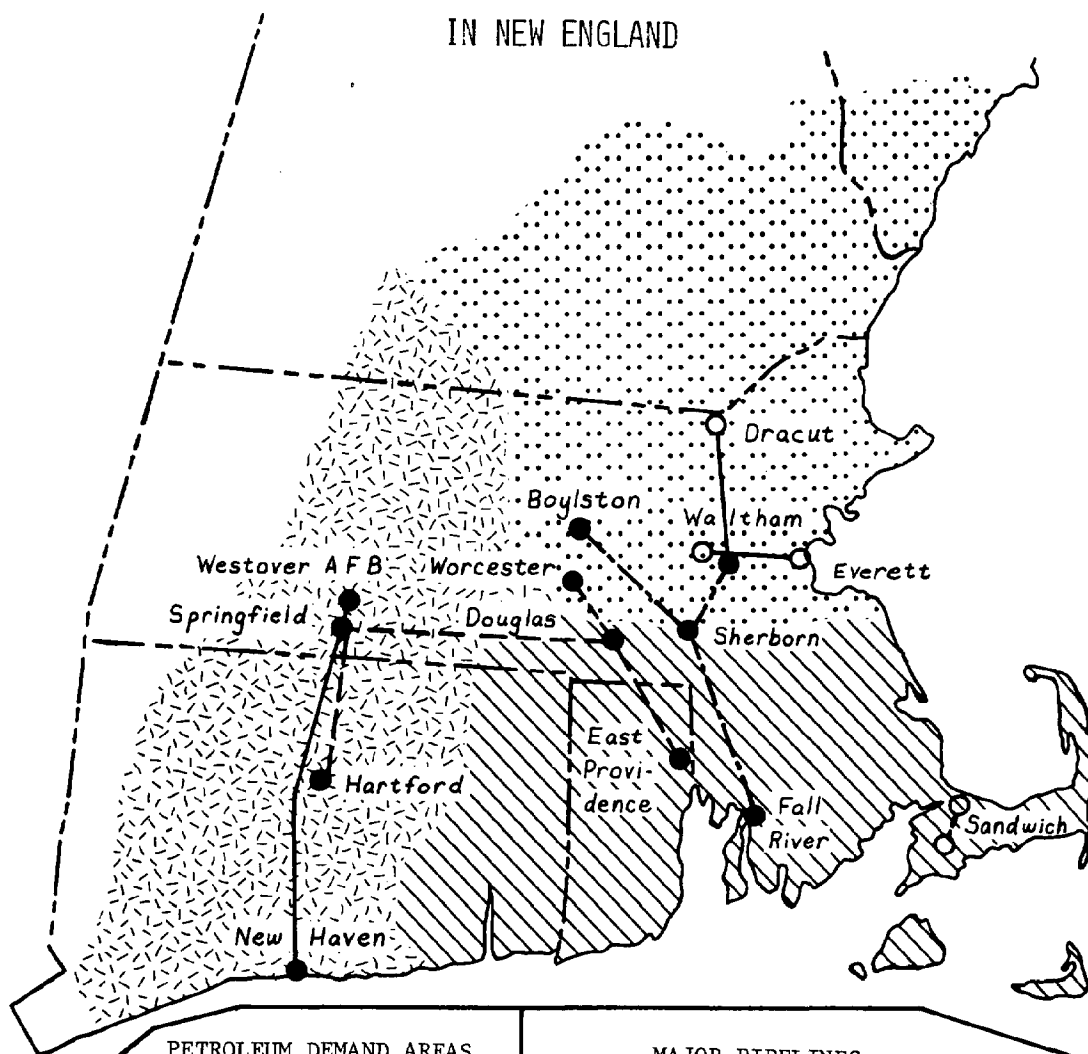


Figure 1 231

# MAJOR PIPELINES AND PETROLEUM DEMAND AREAS

## IN NEW ENGLAND



### PETROLEUM DEMAND AREAS



New Haven

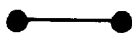


Boston



Providence

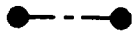
### MAJOR PIPELINES



Jet Lines



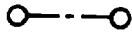
Mobil



Shell



Exxon



Standard Transmission

Sources: EPA, "Oil and Hazardous Substances Contingency Plan", May, 1972

A.D. Little, "Effects on N.E. of Petroleum Related Industrial Development", 1975, p. III 2.

harbors. A mid-depth product terminal may alleviate such congestion, reduce reliance on older, shallow draft tankers and barges, and, possibly reduce the risk of oil spills. (See further discussion under Deepwater Ports.)

As the oil throughput at terminals increases, we can expect an increase in the amount of oil spilled during the ship-shore transfer. The detrimental impacts of oil pollution are discussed in the Marine Environment section. Some petroleum spillage into coastal waters is unavoidable. Limiting petroleum delivery to the ports now hosting marine terminals would at least confine the risk of oil pollution and maintain the water quality in other areas.

The air pollution effects of marine terminals are moderate and result primarily from hydrocarbon emissions. Hydrocarbons are released when petroleum is exposed to the air during unloading petroleum from ships, or filling tanks, or when it is spilled. Hydrocarbon emissions are an important ingredient in the formation of photochemical smog and are regulated by DEQE for conformance to state and federal air quality standards. (For further discussion, see section on tank farms.)

To summarize, petroleum terminals form a key element in the energy supply network in Massachusetts. Terminals require a deep draft channel, waterfront land and access to a distribution network. The environmental effects of terminals on air and water are generally moderate and largely unavoidable. Capacity appears to be adequate to meet future demand without expansion, but additional tanker traffic may cause congestion in ports and harbors.

#### OIL TANK FARMS

Massachusetts depends upon oil for 85% of its energy needs, and, because it has no indigenous source of supply, oil storage is a key concern. For the past fifteen years, Massachusetts has maintained a relatively stable reserve capacity of some 25 days supply.<sup>6</sup> The bulk of this storage is located in the coastal zone for two reasons: first, because our oil arrives mainly via tankers; and second, because a large part of the population is located near the coast. Although tank farms have traditionally been sited in the coastal zone, they are not coastally dependent, with the exception of storage of oil for use in the coastal zone, i.e., bunker fuel for commercial shipping; for supplying oil fired power plants on the coast; for trans-shipment of oil; and surge storage at terminals.

In order to maintain a month's storage (about the minimum to meet market fluctuations) and at the same time meet growing demands for oil products, additional storage capacity will be needed. Massachusetts currently has over 30 million barrels of storage capacity.<sup>7</sup> In order to meet 1990 forecasts for oil consumption, storage for an additional 6-30 million barrels will be required.

Under the Energy Policy and Conservation Act, the Federal Energy Administration has been directed to establish a Strategic Petroleum

Reserve Plan to store up to a three month supply of oil to protect against another foreign embargo.<sup>8</sup> Under the Act, the FEA may, if desirable, place certain of those stored reserves in local demand areas. If these plans are implemented, Massachusetts could conceivably be called upon to maintain a strategic petroleum reserve. For security, economic, and environmental reasons this oil may be stored in underground caverns rather than in above ground steel tanks.

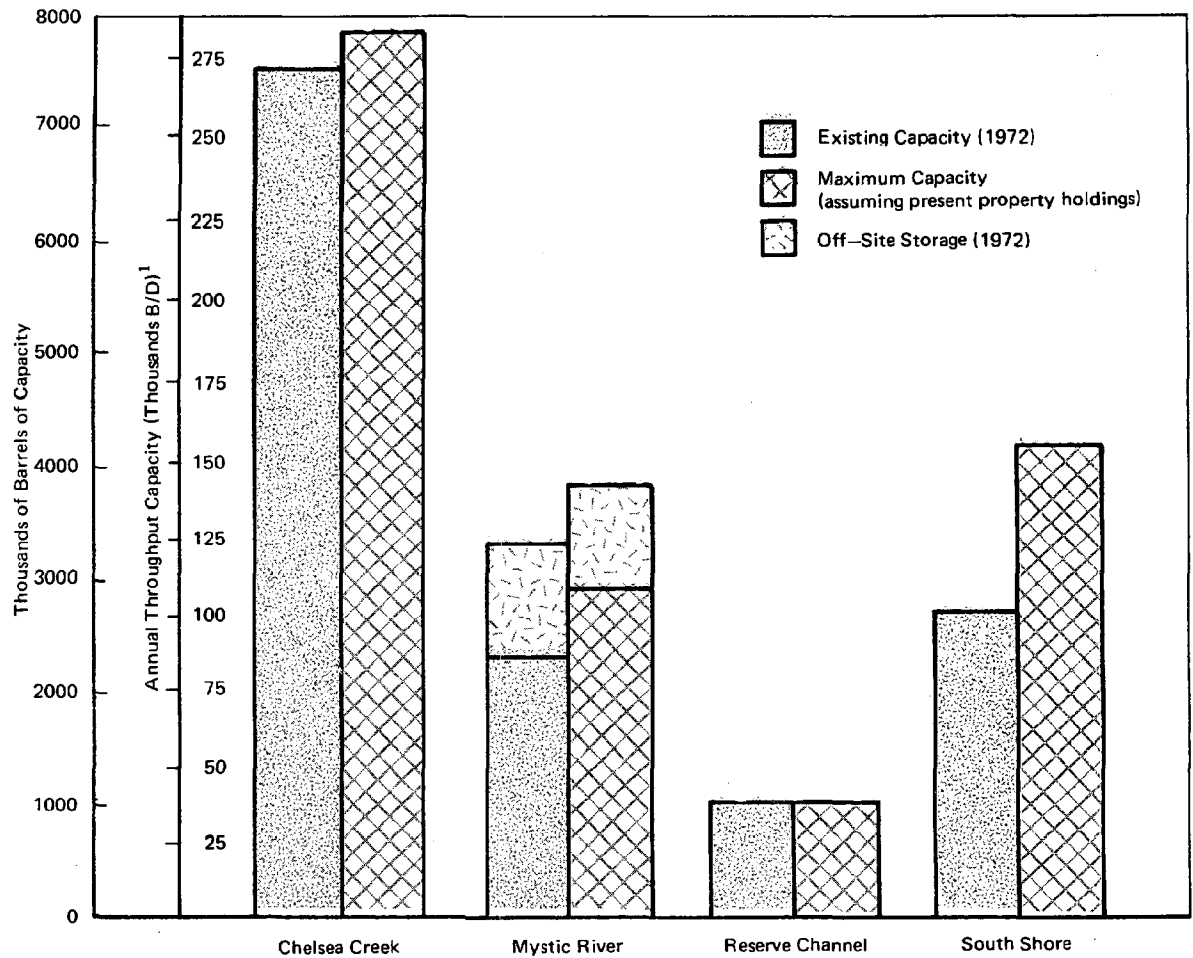
In order to meet the requirements of increasing oil consumption, Massachusetts may need to double its oil storage capacity. Based on 1973 figures, there was only sufficient land for expansion in conventional storage capacity in Boston.<sup>9</sup> (See chart below.) This is equivalent to approximately 3 million barrels of oil. A quick review of existing terminal centers, with the exception of Town-Fore Rivers area, indicates that the ability to construct additional conventional storage capacity is extremely limited.

Outside existing terminal areas in greater Boston, other sites pose serious conflicts. East Boston has requested that the East Boston Pier be used for community purposes such as housing, recreation and open space; the South Boston Naval Annex is being developed into a marine industrial park to provide employment opportunities for Boston residents and may host additional containerport capacity. The Harbor Islands are being developed primarily as a recreational resource.

Some constraints are also present at other sites which have the capability to handle tankers (those harbors with a depth of 30' or more). The land adjacent to the Salem Terminal now accommodates the New England Power Company's electric power plant and 12 storage tanks and room for expansion is limited. Any expansion proposed for New Bedford Harbor might well conflict with the needs of an expanding commercial fishing industry (see Ports and Harbors section) and because of the hurricane dike guarding the harbor, poses entrance and exit problems which could inhibit New Bedford from becoming a major bulk petroleum port. While it would be feasible to expand at either Cape Cod Canal or Fall River, this would require the siting of storage capacity a long distance from principal areas of consumption--greater Boston.

The impacts associated with tank farms are serious and are primarily in the areas of land use and air and water pollution. Tank farms storing distillate oil are a major contributor to air pollution problems resulting from hydrocarbon emissions. Hydrocarbons are an important factor in the formation of photochemical smog and are released from leaks in tanks and valves and from emptying and filling storage tanks. Hydrocarbon limits are established by the Environmental Protection Agency (EPA) and enforced by DEQE. If exceeded, they can result in public health problems. Currently hydrocarbon emissions in metropolitan areas are high, and the EPA has requested the state to develop strategies for their reduction. Some of the strategies for tank farms could include strict requirements for advanced pollution control equipment on new tanks, retrofitting existing tanks, or prohibiting tank construction in metropolitan areas.

# PETROLEUM TANKAGE IN BOSTON HARBOR



1. Based on 13 Turnovers per Year

Source: A.D.Little, Inc., Preliminary Economic Study of Alternative Methods of Supplying Petroleum Products to Eastern Massachusetts, prepared for MASSPORT, 1973, Vol. II, pp. II-78

Although a properly designed tank farm can minimize impact on water quality, accidental release of petroleum into ground water or adjacent water bodies, can occur. Generally this results from faulty equipment, inadequate treatment facilities or rain water run-off. Containment dikes are designed to prevent major spills in the event of a tank rupturing. Failure of these dikes coupled with a tank rupturing caused by coastal storm flooding or earthquakes could result in a major spill directly into coastal waters.<sup>10</sup> While the likelihood of this occurrence is admittedly small, it would be less so inland and oil would be contained by landforms rather than spread over water.

Tank farms can also have a significant impact on adjacent uses. Fire or explosion at a tank farm could result in a public safety hazard. Also, because of their size (approximately 50-60 feet high and 150-175 feet across) tank farms form a visual as well as physical barrier to the enjoyment of the coastal zone. Tanker trucks, travelling to and from tank farms in existing built-up port areas, frequently must use small residential streets, resulting in noise and air pollution problems for local residents.

Since not all tank farms are coastally dependent, inland siting may eliminate or minimize many of the above impacts. More space is available inland for buffer zones to minimize safety hazards; topography and vegetation may be used to limit visual impacts; and tank farms may be sited near major highways so that truck traffic through residential streets is avoided.

While inland siting of tank farms would reduce the environmental impacts in most cases, it would require an initial capital expenditure for pipeline construction and right-of-way acquisition. The construction costs for a 8"-12" pipeline (maximum size needed), based on 1976 completed pipeline costs, would be approximately \$75,000-100,000 per mile.<sup>11</sup> Costs could run substantially higher if pipeline right-of-ways had to go through urban areas.

While this cost is considerable, it might be offset by long-term savings in transportation costs, especially if the inland storage area is strategically located to minimize the number of tanker truck trips between markets.<sup>12</sup> Inland siting could also reduce air pollution and social costs currently associated with truck traffic and visual blight in dense, urban residential neighborhoods. It could provide opportunities for visual and physical access to the coast, allow space for coastally dependent uses, and provide space for other uses which would provide greater tax revenues for coastal communities.<sup>13</sup>

#### GAS FACILITIES

Massachusetts' consumption of natural gas increased from approximately 24 billion cubic feet (BCF) in 1950 to 155 BCF in 1973.<sup>14</sup> Because gas is a clean, efficient fuel it has become a desirable energy source. However, as demand has grown, supplies of domestic gas have been reduced requiring foreign and synthetic gas to supplement domestic pipeline gas. There are basically three types of natural gas

supplements: liquefied natural gas (LNG); synthetic natural gas (SNG); and propane air. LNG is natural gas which has been liquefied to facilitate transport by tanker or tank car. Liquefaction is accomplished by cooling the gas to -259°F which reduces its volume 600 fold. It can then be economically shipped in specifically designed tankers or tank cars and vaporized at its point of destination. SNG is gas made from petrochemical feedstock such as naptha. Normally the feedstock is delivered in liquid form via a marine terminal and is then turned into gas at a processing facility.

Propane-air facilities are designed to supplement natural gas supplies during periods of peak demand. Liquid propane is vaporized, mixed with air and then injected into distribution pipelines. Liquid propane is generally delivered by truck and stored for use in pressurized or refrigerated tanks.

Liquefied natural gas (LNG) has become a more frequently used supplement for pipeline gas in the northeast and especially Massachusetts. Roughly 5% of Massachusetts' gas demand is now met<sup>15</sup> through LNG and, in the near future, this proportion is expected to rise to 7-10%. The price of LNG is two-three times higher than natural gas and is likely to rise even higher.<sup>16</sup> Future price increases are likely, resulting both from the need to use imported LNG and the expected deregulation of new natural gas prices. While these increases may dampen historic growth rates in gas demand, some growth will still take place, requiring importation of greater amounts of LNG.

In the long run, whether we will need more LNG facilities will hinge on a number of factors including: first, whether natural gas is found on Georges Bank and is used in this region; second, whether future regional and national energy needs are based on sound energy conservation programs aimed at reducing overall demand for gas; third, whether federal pricing policies will encourage development of new domestic gas reserves; fourth, whether construction proceeds on a proposed 500-mile pipeline connecting a LNG terminal and regasification facility in New Brunswick to Tenneco's existing pipeline distribution network in New England.

At present, four major facilities in Massachusetts depend upon marine transportation of LNG or feedstock for manufacturing synthetic natural gas (SNG) to supplement pipeline deliveries of natural gas. They are:

Boston Gas Company - Commercial Point, Dorchester - A liquefaction plant with a 611,000 barrel storage capacity which is used to store LNG transformed from pipeline gas. While Commercial Point can also receive LNG from small tankers, most of its LNG supply is derived from liquefying pipeline natural gas during off-peak periods.

Distrigas, Everett - A major LNG receiving terminal with a capacity for storing 900,000 bbls. of LNG. LNG shipped to Everett is used by companies throughout the northeast to meet peak demand.

Boston Gas Company - SNG Plant, Everett - With a capacity to produce 40 million cubic feet of SNG daily, the plant is able to supply up to 16% of Boston Gas' total annual sales. The plant manufactures SNG from liquid propane feedstock delivered by ship to terminals on the Mystic River.

Algonquin - SNG Plant, Freetown - The plant has a capacity to produce 120 million cubic feet of SNG daily and relies on delivery of liquid naptha feedstock landed at the Shell terminal in Fall River and piped to Algonquin storage tanks in Freetown.

Other LNG storage facilities in Massachusetts are either equipped with liquefaction facilities to convert pipeline gas to LNG for storage and use during peak periods or are supplied directly with LNG transported by truck from Canada or from one of the major base load LNG terminals such as Distrigas in Everett. A number of these storage facilities are located on the waterfront, e.g., Fall River Gas Company, Fall River; Massachusetts LNG Inc., Lynn.<sup>17</sup>

Tanks at LNG terminals are primarily holding tanks, constructed in relation to the rate at which LNG is supplied by liquefaction of pipeline gas, by truck or by tanker. The tanks have associated vaporization facilities which allow the company to draw down gas as needed to meet demand. It is possible, in some instances, to handle a larger volume if demand increases, by increasing shipborne deliveries and by adding vaporization equipment on existing facilities and drawing down inventories more rapidly.

In accommodating needs for greater LNG deliveries, a number of environmental and safety factors must be considered, as they must for bulk deliveries of other flammable hydrocarbons. LNG is highly flammable and a hazardous substance, and requires extreme care in handling. Should LNG accidentally spill on land or water, it boils rapidly forming a cold plume of natural gas. If it ignites quickly, LNG pools burn in a manner fairly similar to pools of gasoline. However, if ignition does not occur quickly, a flammable vapor plume may be carried downwind until a source of ignition is encountered (or until the vapors become too dilute to burn). Between quantities of 5-15% LNG vapors in air, the cloud is flammable and, if it accumulates in enclosed spaces and is ignited while in the flammable range, an explosion may occur. If the vapor were to ignite, the flames might burn back to the source of the leaking gas and could endanger other tanks and result in substantial personal and property damage.

Should a massive LNG spill occur as a result of a collision severe enough to damage an LNG ship cargo tank (since LNG ships are double-hulled, the collision would have to be more severe than one which could cause an oil spill, for example), a worst case analysis might postulate the instantaneous release of around 25,000 M<sup>3</sup> of LNG. If ignition occurs quickly, the resulting pool fire is estimated to have a maximum radius of about 1,200 feet and a burning time of about 4 minutes, producing a short, but intense fire. Considering the growing fire size as the LNG spreads as well as the short duration of the fire, a conservative calculation indicates that a zone where wood would ignite



"The maximum feasible length of a cryogenic pipeline is approximately 2.5 miles because of the heat gain from friction and outside sources"

~~doors, or shielded behind structures, would most likely be protected in the 2,000-8,000 foot zone.~~<sup>18</sup>

Proper siting of LNG terminals requires large amounts of land. The tanks, in many instances exceed 175 feet in height and over 300 feet in diameter. Containment dikes around each tank and a buffer zone for safety and green belt purposes raise the total land requirement to 100-200 acres. In addition, LNG sites should have low seismicity factors and the facilities themselves should be designed to stand credible seismic risk.

LNG terminals, like that at Everett, are highly coastally dependent. While it is technically feasible to site a facility inland, away from the marine terminal through which the LNG is imported, the expense involved would be prohibitive. In addition, using a cryogenic pipeline running from the marine terminal to inland storage tanks might increase the probability of an LNG accident. The coastal dependency of baseload LNG facilities thus limits available alternatives.

If facilities are added or expanded in built-up port areas currently able to accommodate LNG tankers (which draw approximately 40 feet of water), the chance of harm resulting from a spill is increased because a large volume of LNG is stored and tanker arrivals are more frequent. If reliance is placed on using existing capacity to handle increased imports, tanker traffic will increase, thereby raising the potential for collision, accidents and spillage. Currently, the Coast Guard promulgates safety measures to minimize risk of collision or accidents. These include requirements on the numbers and kind of tugs used to bring tankers into port, special arrival notification procedures, and restrictions on other harbor traffic while tankers enter ports to off-load LNG. While these measures will reduce the potential for some sort of accident, that prospect, however slight, still exists.

If sited in remote, rural areas, the magnitude of harm to life and property from an LNG accident would be less. However, coastal rural siting would (1) require dredging to accommodate tankers as well as construction of transportation access routes, (2) would obtrude on the visual charm of rural landscapes, and (3) probably entail pipeline networks or truck traffic to transport gas to consuming centers.

Each of these risks and environmental effects must be weighed against one another before deciding how Massachusetts is to meet future LNG requirements.

#### ELECTRIC GENERATING FACILITIES

The Massachusetts coastal zone currently hosts 21 electric generating facilities of various sizes and types (see accompanying chart). The most important of these are the 1 nuclear and 7 fossil fuel plants

which combined produce 75% of the total electric supply in the state.

While demand for electricity has moderated since the oil embargo of 1973-74, pressure for increased requirements continues. Recent load forecasts prepared by consultants, governmental bodies, and the utilities show a continuing growth. Most of these forecasts reflect among many others such influences as conservation, price elasticity, and alternative forms of energy generation. A real problem facing the Commonwealth and New England is making provision for meeting increased demand.

As demand for electricity increases, and power plants retire because of age, pressure to site more plants in the coastal zone may be experienced. Future demand will be affected by such variables as the future price of electricity and other forms of energy, the success of energy conservation programs, and the availability of alternative forms of energy production, such as solar and wind energy. Since World War II, electric energy consumption has been doubling approximately every 10 years. Following the 1973 energy crisis, however, growth in electric energy consumption has diminished from the historic annual rate of approximately 7-8%, primarily because of the increase in price. This dampening in demand caused utility companies to either abandon or push-back the start-up times for a number of facilities originally slated for construction in the coastal zone, including the addition (Pilgrim 2) to the nuclear power plant at Plymouth. There are studies of new developments underway, although none have advanced to the discussion stage yet.<sup>19</sup>

Whether additional plants will be proposed for the Massachusetts coastal zone will depend not only on how moderate growth in electric consumption will be but also on the status of power plant proposals in other New England states. In 1971 the major electric utility companies of New England joined together to form the New England Power Pool (NEPOOL). Through NEPOOL, utility companies coordinate planning for major power stations and interchange power to meet peak needs and to insure electricity is provided to the entire region using the generating units with the lowest costs. Through NEPOOL, the New England utility companies are able to realize the economies of scale gained by building larger power plants because the production from such plants is destined not only for the utility service area in which the plant is located but also for electric energy needs in other utility service areas in New England. Cancellations or delays in construction of some of the proposed major power plants, such as Seabrook in New Hampshire, or the nuclear power plants proposed for Charlestown, Rhode Island, or Sears Island, Maine, would necessitate construction of electric generating facilities elsewhere, possibly in Massachusetts, in order to meet the electric consumption needs of Massachusetts and other New England states.

Power plants are drawn to the coast for a number of reasons: the abundant cooling water supply; proximity to the fuel imported through marine terminals; nearness to major consuming centers; and the fact that power plant equipment components are more easily transported to sites by barge than by road or rail. In fact, development of coal

TABLE I  
ELECTRIC GENERATING PLANTS IN COASTAL MASSACHUSETTS

PLANT	UTILITY SYSTEM	1975 CAPACITY (MW)	PROPOSED EXPANSION DATE OF OPERATION	(MW)	TYPE OF PLANT	AVERAGE FLOW RATE OF COOLING WATER DISCHARGE (CFS)
NEWBURYPORT IPSWICH	New England Municipal	11	None	9	Diesel	NA
GLOUCESTER PEABODY	New England Municipal	28	None	31	Internal Com-bustion Diesel Gas Turbine Diesel	NA
SALEM HARBOR, SALEM MARBLEHEAD	New England Municipal	775	75 (1980), 17 (1981)	6	Thermal-Oil Internal Com-bustion	980
LYNN MYSTIC, EVERETT	New England Power Boston Edison	23	None	1055	Diesel	NA
NEW BOSTON, BOSTON "L" STREET, BOSTON BRAINTREE	Boston Edison Municipal	718	None	49	Thermal-Oil	1400
EDGAR STATION, WEYMOUTH PILGRIM, PLYMOUTH	Boston Edison	38	None	300	Thermal-Oil	640
CANAL, SANDWICH	New England Gas & Electric	560	80 (1976), Combined Cycle	655	Thermal-Oil Nuclear	NA
WEST TISBURY, MARTHA'S VINEYARD	New England Gas & Electric	6	None	560	Thermal-Oil	500
OAK BLUFFS, MARTHA'S VINEYARD	New England Gas & Electric	8	1,180 (1984)	3 (1979), 3 (1981), 3 (1983)	Thermal-Oil	815-860 (with addition 2575-2820)
NANTUCKET	Nantucket Gas & Electric	8	None	93	Thermal-Oil	374 (within addition 800)
CANNON, NEW BEDFORD	New England Gas & Electric	1590	69 (1980), gas turbine	398	Thermal-Oil	NA
BRAYTON PT., SOMERSET	New England Gas & Electric	100 (1985-87), gas turbine	None	380	Thermal-Oil gas turbine	1400
MONTAUP, SOMERSET	Eastern Utilities Associates	398	100 (1985-87), gas turbine			380

SOURCE: Power Plant Environmental Impact Statements, Communications with Utility Companies, and NEPLAN, "New England Load and Capacity Report, 1975-86," January 1976.

burning facilities in place of nuclear plants would increase traffic through ports as New England's railroads cannot presently support much additional coal handling. Power plants require extensive commitment of coastal land not only for the plant itself, but also for attendant facilities and needs, e.g., tank farms, coal storage areas, and buffer zones. A large oil fired plant typically requires 70 acres while substantially more is needed for a coal fired plant (approximately 150 acres) and nuclear (up to 1,000 acres). Structures housing the plant's boiler or reactor can be up to 20-25 stories high. Cooling towers or exhaust stacks can reach to to 100 stories in height, which may result in visual impacts.

Existing facilities consume roughly 21% of all the oil, coal and natural gas brought into Massachusetts each year. As the majority of these products are imported through marine terminals, increases in total fossil fuel plant capacity will result in the need to import additional oil or coal. This in turn will result in the need to construct other facilities, i.e., storage tank farms and coal storage capacity. These facilities can have pronounced impacts on the coastal zone and such effects must also be weighed in evaluating a new electric power plant.

One of the major environmental impacts associated with electric generating plants is that on water quality resulting from discharge of thermal effluent from the plant's cooling system. These impacts can be of different magnitude or type, however, depending upon the kind of system employed. The system which results in the discharge of the greatest volume of heated water into coastal waters is the "once-through cooling" system.<sup>20</sup> Other environmental effects of once-through cooling include those associated with the dredging of tidelands to construct channels and intake structures to ensure sufficient water flow for cooling (see Marine Environment section for a full discussion of these effects).

Many of these impacts can be ameliorated or controlled if closed cycle cooling systems are employed. Since substantially less water is required, closed cycle systems could eliminate one of the needs to site generating facilities in coastal areas.

Closed cycle alternatives, which could be employed in inland locations, include (1) the use of cooling lagoons or spray ponds or (2) "wet" cooling towers. These methods need fresh water to replace evaporation losses.

There are, however, certain disadvantages to using wet cooling towers, cooling lagoons, or spray ponds. First, a cooling pond requires approximately 1000 to 2000 acres for a 1000 MW plant, and "wet" towers may result in fog and vapor fumes and chemical discharges. Both may also severely impact water supply availability as they require the same volume of water as a community of 20,000 people. Another closed cycle alternative in the future may be a "dry" cooling tower which acts like an automobile radiator, blowing cool air over heated coolant. "Dry" cooling towers have no need for replacement water but their technology is still under development. They generate

noise and are difficult to operate in freezing water. Moreover, the power to operate "dry" cooling towers can result in a 15% loss of the power plant's output, thereby adding a substantial cost to their use. Cooling towers may range in height from 60' to over 550' depending upon the technology employed. Thus, both "wet" and "dry" cooling towers can have substantial visual impacts.

In addition to the impacts on water and scenic quality, fossil fuel plants can be a source of air pollution--the most significant being particulates and sulphur oxides. New fossil fuel plants must abide by both air quality emission standards and conform to national air quality standards. The disposal of fly ash and sulphur removed from scrubbers, installed to remove particulates and sulphur, also poses environmental problems.

Nuclear power plants add a whole new dimension to the problems associated with siting. Safety and public health problems due to the potential of highly radioactive releases from either a meltdown of the core reactor or from sabotage must also be considered. Of equal gravity is the problem of how to dispose of radioactive wastes generated by nuclear power plants. Both in matters of public safety from radioactive releases and the ultimate disposal and storage of nuclear wastes, federal law preempts state control and the issues are of a complexity beyond the capacity of state government and individual utility companies to resolve. Consequently, Massachusetts in a November 29, 1976 letter to President-elect Carter signed jointly by the Secretary of Environmental Affairs, House and Senate Leaders, environmental groups, labor, and utilities urged the federal government to "undertake an examination of nuclear power and other alternatives so that we can assure ourselves and our progeny that our choices will always be the correct ones."

Inland sites for power plants may, in some instances, be a possible option to siting in coastal areas, if closed cycle forms of cooling as described above, are employed. The costs associated with closed cycle cooling systems can, however, have an effect on electric generating costs. For a 1000 MW nuclear plant, the capital costs (including capitalization of operating costs) for a "wet" cooling tower system, are greater than double the costs of once-through cooling.<sup>21</sup> Circumstances may, however, bring the costs of once-through cooling systems nearer to the levels of closed cycle systems. If, for example, to meet EPA standards, a once-through cooling system needs a lengthy inlet and outlet discharge channel running 1 to 2 miles off-shore, then the costs associated with such a system might approach the cost for a "wet" tower. The cost of transmission lines, while less of a determinant, might also equalize the attractiveness of inland alternatives. If a plant had to be constructed more than 100 miles from a substation and existing transmission line corridors in order to employ once-through cooling, these circumstances could bring the costs in line with constructing a "wet" cooling tower.<sup>22, 23</sup>

Other alternatives to inland siting include underground siting (which is technically feasible but substantially more expensive) and off-shore siting (which is feasible but still under study). Inland

siting is thus the prime alternative to coastal siting and should be given serious consideration when planning a new facility. Inland locations are not, however, free from problems--air pollution may be more severe inland than on the coast since the prevailing coast winds normally carry pollutants out to sea. In addition, both wet and dry cooling towers, as mentioned, are visually obtrusive, although topography may be used to mitigate visual impacts. "Wet" towers can also cause fogging problems. In eastern Massachusetts, if closed cycle systems are not employed, inland siting would be severely constrained because only the Merrimack River can provide the 500,000 gallons of water per minute needed to cool an average sized electric generating facility.<sup>24</sup>

## REFINERIES

Massachusetts presently lacks any refinery capacity, a paradoxical fact considering 85% of the Commonwealth's total energy requirements are met by petroleum products.

Several proposals have been made to site refineries in Massachusetts. A 1974 Massachusetts Port Authority study recommended an offshore terminal for crude oil along the northern Massachusetts coast with a nearby refinery.<sup>25</sup> During the past year, the Governor has discussed with Venezuelan interests the establishment of a refinery in Massachusetts. With the advent of OCS oil and gas exploration, some speculate that a high find (2.4 billion barrels total with a maximum daily production rate of 450,000 barrels) would be adequate to support the construction of a refinery in New England.<sup>26</sup>

The refinery most commonly proposed for New England is a fuels refinery with 250,000 barrel per day capacity. Siting requirements and impacts of a comparable refinery have been the subject of numerous studies in New England and are summarized in the following table.

Four major resource requirements must be met before a refinery is sited. First, a labor pool of about 2,000 employees during the 3 year construction phase must be available as well as housing and other social services to accommodate this work force. Second, substantial land (1000-1500 acres) is required. Third, water for cooling and processing purposes must be available (depending on the product mix, refineries are major users of water, requiring about the same amount as a population of 13,000 people).<sup>27</sup> To meet federal and state water quality standards a large, well-flushed water body is required so that federal and state mandated water quality standards can be met. According to one study, the Merrimack River north of Boston is the only eastern Massachusetts river with this capacity.<sup>28</sup> Fourth, a guaranteed supply of crude oil for refining must be secured.

Of these four conditions, a guaranteed supply of crude oil is the most significant constraint on refinery siting. Crude oil can be imported directly from foreign nations; supplied from existing domestic sources; or, in the future, possibly supplied from the North Atlantic OCS. Changing federal policies on imports and the uncertain economics of exporting crude vs. refined products make foreign sources of crude oil unreliable, unless a foreign crude source has an equity stake in

Table 1

SITING REQUIREMENTS OF A 250,000 BARREL PER DAY REFINERYRESOURCE REQUIREMENTS

Land	1,000-1,500 acres of clear, flat, industrially zoned land, 40% of which is buffer
Water	5-15 million gallons of water per day (amount depends largely on product mix and refinery design; 40%-80% is used for cooling; the remainder for processing)
Electric Energy	2-9 kwh per barrel throughput
Fuel Oil	15,000-25,000 barrels/day of low sulfur fuel

ECONOMIC REQUIREMENTS

Construction Manpower	1,800-2,200 (30% of which are relocated from other areas) (over 3 years). Average wage: \$20,000
Operation and Maintenance Manpower	410 persons, 11%-14% of which are relocated from other areas. Average wage: \$15,000
Capital	\$690 million

TRANSPORTATION REQUIREMENTS

Pipeline from production platform and/or marine terminals to deliver crude oil.

Truck or rail for construction to deliver chemicals used in processing.

Pipelines or trucks to deliver refined products.

NOTE: Estimates assume a 250,000 barrel per day facility that would produce a product mix similar to the demand mix for the region (i.e., a high fuel oil percentage as opposed to a high gasoline percentage).

33% gas	27% distillate
4% kerosene/jet	36% residual

Sources: (1) Massachusetts CZM, Oil Refinery Development in Massachusetts, May 1976.  
 (2) NERBC/RALI, Onshore Facilities Related to Offshore Oil and Gas Development Factbook, November, 1976.

the refinery itself. Importation from existing domestic crude oil production areas to Massachusetts or New England by major oil companies is unlikely because their Mid-Atlantic refineries are operating below full capacity. The possibility of crude from the North Atlantic OCS will depend on whether a major find is discovered. Even in the event of a major find, OCS oil will not be on line for at least five to ten years after the first lease sale now scheduled for June 1977, and will probably be delivered to Mid-Atlantic refineries.

Any refinery proposal would require crude brought in through one or more of the following methods: a marine terminal, a deep water port, or a pipeline from Georges Bank.

The major economic impacts of refinery development are the increased local and state revenues from direct, indirect, and induced taxes and the increased spending power of residents, particularly in the construction phase. The major social impacts are the costs for municipalities, particularly those adjacent to the refinery location which experience population growth but do not benefit from the expanded tax base. The Energy Impact Program authorized by the 1976 Coastal Zone Act Amendments provides several sources for funding public services and facilities needed to accommodate coastally dependent energy facilities, including refineries. (See Program Incentives description in Chapter V.)

The major environmental impacts are the amount of land and water consumer and the effects on air and water quality. A 250,000 bbl. refinery requires 1,000-1,500 acres of land for processing, tank farm storage, and a "green belt" buffer zone. Vacant tracts of this size with suitable topography and load bearing characteristics are not readily available along the shore. In addition, siting a refinery along the shore could adversely impact any number of coastal resources important for public health and safety, for recreation, for commercial and port activities, and for marine production. Thus, the siting of potential refineries inland, close to areas already served by transportation, communication and water supply should be considered.

The major effluents from refineries are thermal discharges from cooling water and chemical contaminants from processing water. "Once-through cooling systems" (when all heated water is discharged) can produce up to 15 million gallons of water per day having temperatures high enough to kill marine organisms.<sup>29</sup> (See discussion of thermal effluent effects in Marine Environment section.) Thermal discharges and the quantity of water consumed can be reduced by recycling cooling water, employment of air cooling systems, or a combination of both.

Processing water is a less significant refinery effluent by volume than cooling water, but more significant in terms of contaminants. By federal law, these discharges must meet specified effluent standards. By requiring segregation of clean waters (non-contaminated storm water and cooling water) from process waters, the recycling of cooling water could be encouraged and process wastewater discharge could be subject to a more stringent set of effluent guidelines.



The major emissions from refineries are carbon monoxide, sulfur oxides, hydrocarbons, and particulates.<sup>30</sup> Solid wastes from refineries are a final environmental concern, since these are frequently contaminated with oil and hazardous substances.

#### DEEP-WATER PORTS

As stated previously, channel depths in Massachusetts ports currently limit tanker size to 25,000-60,000 DWT. While larger tankers could be accommodated through extensive dredging, the cost and environmental impacts may be great. Construction of a deep-water port would allow very large tankers (100,000-500,000 DWT) to deliver petroleum to Massachusetts. A deep-water port generally consists of one or more unloading buoys connected by pipeline to a fixed platform and pumping station and one or more pipelines connecting the pumping station to an onshore facility which includes a storage tank farm.

Deep-water ports are generally located five to twenty-five miles offshore so that for the larger tankers sufficient bottom clearance may be obtained.

Deep-water ports may result in significant savings in petroleum transportation costs and reduce harbor congestion. Environmental impacts would result primarily from pipeline construction offshore and construction of an onshore storage tank farm requiring several hundred acres. Whether a deep-water port would increase or decrease over current levels the chronic spillage at terminals, is relatively unknown. While the possibility of catastrophic spills from tanker accidents is likely reduced, the size and impact of such a spill is greatly increased due to tanker size.

The construction of a deep-water port has traditionally been tied to the construction of a refinery. Since a deep-water port requires a high initial capital investment, its success requires a large petroleum throughput. However, a single refinery may not economically justify a deep-water port. A deep-water port designed to accommodate petroleum products and connected to existing distribution systems would likely increase its attractiveness.

In summary, a deep-water port could provide significant savings in transportation costs, reduce harbor congestion, and possibly reduce the probability of tanker accidents. On the other hand, substantial land would be required for tank farm storage, pipeline construction may adversely impact marine resources, and a tanker accident, were it to occur, would result in far larger spills than currently possible.

#### OUTER CONTINENTAL SHELF (OCS) EXPLORATION AND DEVELOPMENT

To meet national energy needs, the federal government has embarked on a program to develop both oil and gas reserves on the Outer Continental Shelf and other indigenous sources of energy. As a consequence,

the federal government has proposed to lease for oil and gas exploration and development large areas on Georges Bank, off the coast of New England.

The possible magnitude of oil and gas resources on Georges Bank is speculative. Thus the impacts of OCS development on Massachusetts' energy supply and coastal resources are uncertain. OCS development has been hotly debated in the Northeast over the past few years. It is recognized that the nation needs oil and gas and that OCS development could produce numerous jobs and provide economic stimulus to port areas such as New Bedford and Fall River. However, the Commonwealth is also very concerned over the potential environmental and social impacts associated with off-shore oil. The probability of onshore and offshore pollution caused by oil spills, whether from tanker transport of oil or OCS production, is of serious concern to coastal communities. Given the present level of oil spill containment technology, a spill could have a serious adverse impact on the existing tourist, recreation, shellfish, and commercial fishing industries. However, with adequate planning and strict safeguards, the benefits of OCS development can be maximized and many adverse impacts minimized.

The area of ocean bottom near New England which is proposed for exploration is Georges Bank and Nantucket Shoals, an area known traditionally for its rich fishing grounds. Georges Bank is situated east of Cape Cod on the Outer Continental Shelf (OCS) in the North Atlantic.

Georges Bank is approximately 50 miles wide, beginning about 60 miles southeast of Nantucket and extending eastward about 125 miles, covering approximately 15 million acres. The water depths in this area range from approximately 50 to 600 feet. The U.S. Department of the Interior is scheduled to sell leases for tracts totalling one million acres in 1977. The closest distance of these tracts to Massachusetts shores is 40 statute miles. Because of the risks of spills coming ashore, potential conflicts with the fishing industry and biological significance, the Governor has recommended that 13 percent of the area be withdrawn from the proposed lease sale.

OCS operations can be reviewed as occurring in three overlapping stages: exploration, development, and production.

Exploration - The exploration phase extends from the lease sale to the point at which commercially recoverable oil and gas reserves are located. If exploratory rigs do not locate commercial quantities of oil, this phase lasts from lease sale until lease abandonment. The amount of petroleum resources found during exploration and the determination of the rate at which they may be extracted are major factors which will affect the level of later activities and impacts.

Development - The development phase encompasses those activities required to bring a discovered field up to the point of commercial production. During this phase, most of the crucial decisions with respect to the location and construction of onshore and offshore facilities are made. Construction may be initiated for facilities such as offshore platforms, pipelines, tank farms, tanker terminals, gas processing plants, and a variety of other facilities which will become operational

when oil and gas start flowing. The large amount of labor-intensive construction activity during development creates substantial local employment and also the greatest pressures for housing and community services to accommodate the influx of workers.

Production - In the production phase, the offshore wells which have been drilled during development begin operating and the oil and/or gas is transported to onshore facilities for storage, refining, or marketing. The number of jobs during production drops to a lower, but steadier level. In the declining stages of production, activity drops off significantly and many facilities gradually are closed down.

The following table illustrates the possible schedule of activities to explore and produce oil and/or gas from an oil field which has a life of 25 years.

<u>Offshore Phase</u>	<u>Onshore Activities</u>
Exploration (mainly years 1-8)	harbor services and supplies for vessels servicing offshore rigs, port storage and warehousing space, air support, administrative offices.
Development (mainly years 4-10)	construction of offshore platforms, increased port activity to service platforms, construction of various oil and gas transportation and processing facilities.
Production (mainly years 6-25)	deployment of transportation and processing facilities, platform supply and maintenance operations, well workover operations.
Shut-Down (mainly years 22-25)	gradual shutdown, removal, or conversion of facilities, cap dry wells and abandon non-producing field.

Factors influencing on-shore development include the size of the find, its composition, the location of the find and its rate of production, existing land uses in the region, i.e., whether there is capacity to accommodate the developer and physical characteristics of the land. The following breakdown is an outline of the kinds of on-shore facilities which might be expected at each phase:

#### EXPLORATION FACILITIES

--Temporary Service Bases - During the five years subsequent to the lease sale it is expected that temporary service bases will be established to support offshore operations. These bases will provide the logistical support to vessels shuttling back and forth to the exploratory rigs. Because of the unusually severe weather conditions on Georges Bank these support vessels will probably be in the 150 foot to 200 foot range.

Site requirements for a temporary service base include: close proximity to off-shore tracts; sheltered harbors; industrially zoned land; water depths of at least 15 feet; good rail and highway access; fresh water availability; fuel storage facilities and hopefully proximity to a heliport, used to ferry employees and valuable cargo.

Total service base employment during the exploratory phase would range from 200-300 persons, with approximately 50% coming from the local labor force.

Since many oil companies have already established support operations for the Mid-Atlantic area in Davisville, Rhode Island, it is expected that most temporary service base activity for any North Atlantic leasing will also operate out of Davisville. Were a service base to be established in Massachusetts, the primary impacts may be conflicts with existing harbor uses.

--Heliports - Helicopters are used in offshore operations to facilitate crew changes and supply lightweight equipment. Since helicopter operation costs increase substantially with distance, it is very likely that a heliport will be located in Massachusetts. A heliport would operate throughout the life of an offshore field, with activity peaking during the development stage. Heliports are generally established at existing airports and require 2-10 acres depending on the number of helicopters. Employment would range from approximately 15 during exploration to over a hundred during development. Primary impacts would be increased noise levels.

The exploration phase also raises concerns regarding impacts offshore although these are of a far smaller magnitude than the offshore impacts during the development production phases. The fishing industry, which predominantly uses trawling equipment, requires unrestricted space for maneuvering. Thus, loss of fishing space, subsurface obstructions and debris resulting in gear damage and loss of catch and navigational interactions are possible. Oil spills, and the resulting effects on spawning areas as described in the Marine Environment section, are also clearly of concern.

#### DEVELOPMENT FACILITIES

If a find of commercial proportions is made on Georges Bank, construction will begin on those facilities needed to extract the oil and/or gas and deliver it to shore for processing. Many of the activities which take place during the development stage are extensions of the exploration phase at a greatly intensified level. More berth space, construction facilities, storage yards, offices, heliports, will be required with resulting growth in jobs, wages and development in port areas. The kinds of on-shore facilities during this phase include:

--Permanent Service Bases - Permanent service bases would be established to support the increased level of activity offshore during the development phase. It is likely that bases would be established in several New England ports. Requirements are similar to those of temporary service bases but on a larger scale. Total land use for all

service bases could reach 200-300 acres with total employment approaching 1000 (75% local). Service bases might also be established to support pipeline construction and platform installation activities.

Service base impacts would result from port and harbor conflicts, infrastructure needed to support additional population and possibly from dredging to construct base.

--Development Platforms and Rigs - If exploratory drilling shows that oil and/or gas is present in commercial quantities, platforms will be installed to drill the development wells. These platforms are huge fixed structures supported by legs. The choice of the number, type and locations of platforms to be used have important bearings on the kinds and level of demands placed upon the service base. For the first lease sale on Georges Bank, it is assumed that a maximum of 10 to 25 platforms will be used. These rigs and platforms will probably not be constructed in Massachusetts. However, if they were to be built here, it would require a major commitment of coastal land. Siting needs for rig construction yards include 200-1000 acres of land with direct access to deep water (at least 15-30'), substantial amounts of fresh water (upwards of 100,000 gallons per day), and at least 210 to 350' of horizontal and vertical clearance.

Because rig fabrication yards require such extensive amounts of land, they may preempt other maritime dependent uses. While it is unlikely that a complete fabricating yard would locate in Massachusetts, there is a high possibility that a so-called "satellite" facility might locate here. Such a facility would be much smaller and produce various components of the platforms. The larger shipyards in Massachusetts are well-suited to these specialized activities.

--Partial Processing Facilities - These are facilities used to separate the oil, gas, water and mineral impurities pumped from the well. In many instances these facilities are located on the platform itself; however, they are sometimes located onshore as part of the storage or refinery operations. The further an oil field is from shore the greater the likelihood the partial processing will be done at sea. For Georges Bank it can be expected that oil-water separation and gas separation will take place at sea.

The single most difficult problem associated with gas facilities, both partial and final, (see below), is the air quality problem. Depending upon the technology used, however, much of this problem can be resolved.

--Oil and Gas Transportation - If commercial finds of oil and/or gas are made on Georges Bank, decisions concerning modes of transport to shore will be made. If oil is discovered, it may be transported by either tanker or pipeline. If gas is discovered, transport can only be by pipeline.

In the past, oil production has usually been brought ashore by pipeline. However, due to the large distance from refineries and relatively small estimates of reserves, a pipeline from Georges Bank may

not be economically justified. The most likely scenario, therefore, is for oil to be transported to mid-Atlantic refineries by tanker. However, if refineries were built in southeastern New England and a sizeable amount of oil discovered, an oil pipeline may be constructed.

If a commercial gas find is made, one or more pipelines will have to be constructed as the offshore liquefaction of gas and transport by tanker is too costly. Usually, the pipeline system for gas is kept separate from that for oil.

While the decision to transport by tanker or pipeline will most likely be made on economic grounds, there are environmental impacts associated with either mode of transport. Tankers have a worse record than pipelines per volume transported in terms of both chronic and accidental spillage. Pipelines, however, can obstruct trawling operations unless they are buried and, if buried, will result in disruption of the ocean bottom from dredging activities.

It does not appear that there are any technical reasons why a pipeline could not be constructed to shore, although areas of sand waves, rock outcroppings, and geologic faults may have to be avoided.

The Department of Interior's Draft Environmental Impact Statement (EIS) on the Georges Bank lease sale indicated that the most likely pipeline route would be toward the southeastern Massachusetts-southern Rhode Island region (by-passing Martha's Vineyard and Nantucket) specifically, Buzzards Bay or Narragansett Bay. However, the economics of pipeline construction would indicate that the shortest distance to shore would be preferred by industry, suggesting a landfall on Cape Cod. The least likely route would be to Cape Ann. The seas around both these latter areas are protected by Massachusetts Ocean Sanctuaries laws.

--Gas Processing Plants - New England pays a higher price for natural gas than most states, due to the high cost of piping gas from the south and, as mentioned earlier, the shortage of natural gas requires us to import costly foreign supplies.

The presence of natural gas on Georges Bank might help to secure an adequate supply of gas and tend to stabilize the price. If gas were found, it would result in the laying of pipelines to shore and the construction of one or more gas processing plants in New England.

These plants are designed to recover liquid hydrocarbons and remove any impurities. Due to the high cost of sub-sea pipelines the industry generally tries to land the gas at the closest possible point to the off-shore field. General siting requirements for gas processing plants are 50-75 acres for a 200 million-1 billion cubic feet per day plant (much of this acreage serves as a buffer); 200,000 gallons of water per day for cooling with the actual amount varying with the cooling process employed. A facility such as this would employ roughly 550 people during construction and roughly 45-55 for operation maintenance.

--Pipe Coating Yard - Steel pipe is prepared in pipe coating yards for sub-sea pipelines through the application of concrete, asphalt, and other sealers. One such yard may be required if a major pipeline is constructed from Georges Bank. While the size may vary, most yards require approximately 100-150 acres of waterfront land and may employ upwards of 200 people (though they operate only 6 months of the year). They have a minimum harbor front requirement of 750 feet with access to water of at least 15 feet. These yards are only needed for approximately 3-8 years, thus they are short term coastally dependent uses.

The environmental impacts associated with a pipe coating yard include: air emissions resulting from concrete and asphalt operations, hot water discharge from cooling operations pollution run-off from the site. These and other problems can be ameliorated by employing adequate technology.

#### PRODUCTION

Six to eight years after the lease sale production may begin. Production activities can run up to 20 years depending upon the size of the find. Employment during the production phase is greatly reduced.<sup>32</sup>

Overall, the impacts associated with OCS development can be broken down into two categories: off-shore and on-shore. Off-shore impacts include water quality impacts due to oil spills and leaking; tanker traffic; and obstruction of commercial fishing operations by platforms and pipelines. On-shore impacts can be further broken down into two categories: those associated with non-petroleum facilities such as service and supply bases, and rig fabrication yards. The primary impacts of these facilities are land use conflicts; however, with adequate planning, these impacts can be overcome. The second type of on-shore impacts are those associated with petroleum related facilities such as gas processing facilities, pipelines, tank farms, and land falls. These impacts include dredging, air and water quality, as well as land use and must be carefully weighed prior to siting any of these facilities in coastal areas.

Many of the impacts from OCS development, both onshore and offshore, during all phases of development can be ameliorated with adequate planning, technological safeguards, and operating procedures. In Massachusetts the CZM program, the Lieutenant Governor's Office of Federal-State Relations, the Office of State Planning, and the Energy Policy Office have already taken an active step in this direction.

Over a two-year period, CZM and the previously mentioned agencies, have participated actively in the leasing process, commenting on environmental conditions in the offshore lands proposed to be leased, proposing technological safeguards for mitigating prospective conflicts and hazards, and recommending procedures for decision-making that would draw in the voices of the states and affected interests--including local governments and the fishing industry. Among the recommendations put forth by EOEa for the Georges Bank Lease Sale #42 are the following:

--Pipeline Burial: Oil and gas pipelines would be required to be buried at least six feet where technologically feasible. This would prevent pipelines from obstructing fishing operations and protect pipelines from damage due to trawling doors.

--Placement of Structures: Rigs and platforms pose hazards to navigation for commercial vessel traffic and to the maneuverability of fishing vessels. The recommendation is that the petroleum industry combine operations where feasible to reduce the number of rigs and platforms, thereby reducing the obstacles to vessel traffic and maneuverability.

--A Second EIS in the Lease Sale Process: Currently, the Department of Interior is required to evaluate the impacts resulting from the act of leasing submerged lands, but at a point in time when knowledge about the numbers and kinds of facilities required is only scanty. The recommendation is that a second Environmental Impact Statement be required, later in the leasing process, when adequate information is available but before development activities begin in full-scale.

The Lieutenant Governor has actively carried concerns and recommendations developed by CZM to Washington, both as Vice-Chairman of the OCS Policy Advisory Board (which counsels the Secretary of Interior on OCS issues), and as the spokesman for the Commonwealth in Congressional hearings and national conferences of the petroleum industry. Under CZM contract, the Office of State Planning has prepared a manual of technical assistance for communities, describing the possible effects on communities of offshore oil and gas activities and the kinds of tools available for mitigating them.

#### NARRAGANSETT BASIN COAL DEVELOPMENT

The Narragansett Basin is a 900 square mile area of southeastern Massachusetts and Rhode Island. It is a basin in the geological sense, meaning a depression in which the layers of rock fold concavely upward. No coal is currently being mined from the basin; however, it was mined periodically from colonial times until the 1950's. The oil and gas shortages of the last few years have stimulated renewed interest in the potential for coal development in the basin. This has led the National Science Foundation and regional, state and private organizations to fund Weston Observatory, a research institute of Boston College, to determine if sufficient coal resources exist to warrant development.

Weston Observatory has completed the first year of an approximately three-year study and results thus far are encouraging and appear to justify further exploration. In six of eleven boreholes, thick (8-25') seams of coal were found. Although it could not be determined if sufficient coal is present to justify development, two promising areas were identified and one of these include Brayton Point in Somerset. In general, the analytical results show that coal from the basin is semi-anthracite with generally very low amounts of sulfur.<sup>33</sup> The ash content is quite variable, although much of it appears to be favorable to separation which is necessary if the coal in the basin is good enough for



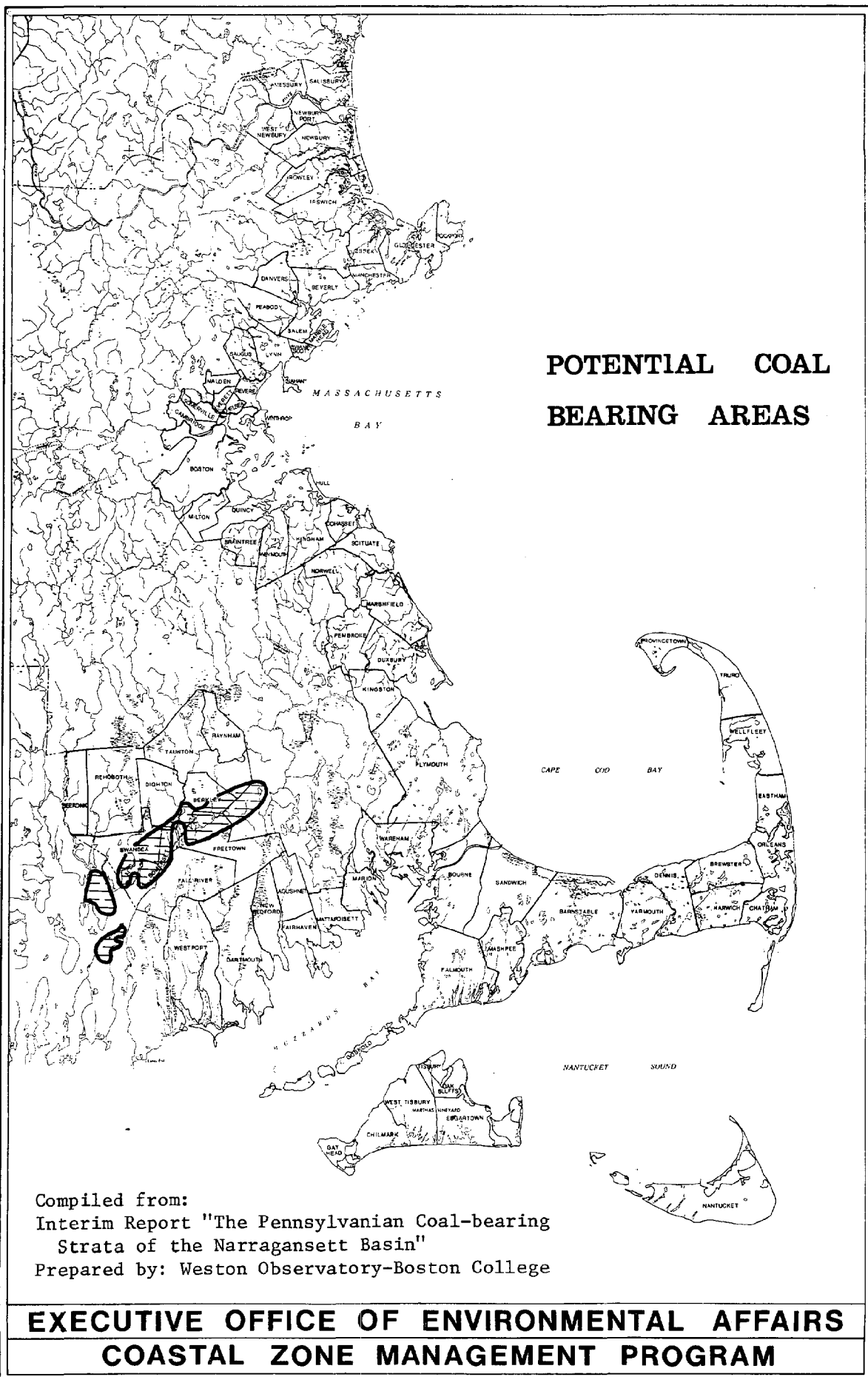


Figure 4 255

use as an energy source. More drilling is planned to determine if economically extractable quantities are present. Figure 1 shows the areas that the Weston Observatory research group has identified as potential coal-bearing areas suitable for future exploration. A large percentage of the top priority area is within the Massachusetts Coastal Zone Management boundary.

If sufficient quantities of coal are present to warrant development, the two most likely methods of extraction are by shaft mining and/or in situ gasification. Strip mining would not be used because most of the coal deposits are located too deep and the beds are too steeply dipping. To avoid transportation costs that might make coal use non-competitive with oil, mine-mouth power plants may be used. Mined coal may be either burned to produce electric power or utilized by an out-of-the-mine gasification unit that produces a low BTU gas that can be used as a substitute for natural gas in electric power generation. Gasification may also be performed in situ by cooking the coal in the ground and collecting the down seam low BTU gas that is produced.<sup>34</sup> Both in situ and out-of-the-mine gasification technologies are being investigated by the Energy Research and Development Administration.<sup>35</sup>

Potential environmental problems are associated with the extraction and use of coal as an energy resource. If shaft mining is employed, the potential for water pollution and subsidence must be addressed. The low sulfur levels of Narragansett Basin coal reduce the possible water quality impacts generated by sulfuric acid leaching and runoff. Subsidence problems that have afflicted other areas of the country where subsurface mining has occurred can be avoided if strict engineering regulations are applied. The environmental impacts of gasification appear to be small, but they will depend to a great extent on what gasification technologies evolve.

Other potential environmental problems associated with coal development include disposal of fly ash, reclamation of land after use, and the aesthetics of mining operations near non-industrial land uses. Fly ash can possibly be used as an additive to dredge spoil or by itself as a construction aggregate.

Reducing the air quality problems would be a major environmental barrier to burning this coal for power generation. Certainly, the low sulfur levels measured so far for the basin coal are encouraging in this regard.

#### ENERGY CONSERVATION AND ALTERNATIVE FORMS OF ENERGY

The success of energy conservation has direct bearing on the need for energy facilities. Vigorous energy conservation measures can lessen the impacts of new facilities on the coastal zone by not requiring as many.

Americans currently waste substantial amounts of energy in their homes, cars, industry, and businesses. Such waste and inefficiency

add substantially to energy growth rates and require, in turn, the construction of new energy facilities and the development of new energy supplies.

The Massachusetts Energy Policy Office has prepared a comprehensive energy conservation program for the Commonwealth, as directed by the federal Energy Policy and Conservation Act (PL 94-163). The principal features of this program are:

- development of new lighting standards in the State Building Code for buildings used by the general public, including institutional, educational, and government buildings;
- promoting use of carpools and vanpools through offering computer carpool matching services, assisting employers to establish ride sharing programs, and other means;
- development of energy efficient procurement standards for state government purchases;
- development of thermal and lighting efficiency standards in the State Building Code for new buildings;
- training and technical assistance to the commercial sector to bring about energy savings;
- developing an information program to educate the public regarding conservation measures;
- development of a program to promote greater recovery and use of waste oil; and
- incorporating energy conservation improvements in public housing.

In summary, the state energy conservation plan includes a number of programs, some required by law and some voluntary, that will help people in the state to realize energy and monetary savings over the coming years. Massachusetts CZM supports this program and will work with the Energy Policy Office to insure its rapid implementation.

#### ALTERNATIVE FORMS OF ENERGY

Massachusetts is now heavily dependent upon traditional fossil fuel and nuclear forms of energy. There are, however, numerous alternatives to such dependence which should be thoroughly explored. These alternatives might help to reduce the impacts associated with constructing new fossil or nuclear facilities. In addition, by developing these alternative forms of energy, we have an opportunity to create new industry and strengthen the state's economy. Even with these alternative forms of energy we will still require the traditional types. Some of the alternative forms which should be considered include:

Solar - Solar power cannot today economically produce electricity; however, solar technology is available for heating and cooling purposes. Solar collectors are currently available which can provide up to 80% of the hot water and up to 30% of the heat for a typical home. Solar collectors can, however, have visual impacts.

Wind Energy - Wind energy could become an important auxiliary form of energy. Its fuel is free, it is pollution free and is non-depletable. However, wind energy suffers from numerous problems. First, it cannot yet be used on a large scale. While wind units exist for the individual home, large scale wind units are far from technologically perfected. Secondly, wind is erratic and it is difficult to store the power, thus the electrical supply is erratic. Thirdly, large scale wind units, by their very size, may entail dredging, filling, noise, and visual impacts. However, most of these problems are solvable, and consideration must be given to wind energy as a viable alternative.

Solid Waste - Resource recovery energy facilities produce either steam to run a turbine off-site or generate electricity on-site. In both instances this is accomplished by burning trash as a fuel similar to the manner in which fossil fired power plants burn coal or oil. These plants may have air quality problems associated with them and their cost effectiveness is yet to be shown; however, both of these problems are now being worked upon and once corrected could make solid waste plants attractive alternatives.

## OBJECTIVES

The management program for energy facilities within the coastal zone should encompass the following objectives:

1. To encourage energy conservation and the use of alternative forms of energy
2. To allow for an adequate supply of energy
3. To ensure that coastal energy facilities are sited to minimize impacts on marine and visual environment
4. To provide adequate sites for needed facilities.

## CZM POLICIES AND PROGRAM RECOMMENDATIONS

The discussion provided in the text of the energy section suggests that a number of factors should be weighed in the evaluation of energy facilities and sites. Such an evaluation must be institutionalized in a process which takes adequate account of national and regional needs in attempting to weigh the social, economic and environmental impacts associated with the siting of energy facilities. The statute governing the Massachusetts Energy Facilities Siting Council provides for such a process.

Policy (28) Maximize the use of existing oil terminals. For new oil terminals, ensure that environmental impacts and effects on port operations are appropriately considered.

An oil terminal is by its nature a coastally dependent facility, and, as such, must be accommodated within the coastal zone. In exercising its authority over the siting of oil terminals, the Energy Facility Siting Council (EFSC) has agreed to maximize the use of existing oil terminals by:

- assessing the need for a new oil terminal, including determining whether existing capacity is available and would fulfill the need and whether such capacity is available for use by the applicant.

Where the EFSC has approved the need for a new oil terminal, the EFSC has agreed to consider environmental impacts and effects on port operations by:

- assessing the air, water, and land use impacts associated with the use of the proposed site,
- weighing the impacts of any new dredging that may be required for the terminal against the use of alternative sites that may not require new dredging,

--assessing the impact of siting the oil terminal on existing or future port operations (will the use of the proposed site preempt or conflict with future needs of the fishing industry, maritime commerce, or other marine industry?), and

--considering whether the oil terminal can optimize use of existing infrastructure and is accessible to pipelines for distribution of oil.

Assessment of these factors will provide for adequate balancing of potential environmental impacts while providing necessary energy supplies at the lowest possible cost.

In addition, oil terminals should not be sited in areas designated by the Secretary of Environmental Affairs as Areas for Preservation or Restoration/Areas of Critical Environmental Concern.

#### IMPLEMENTATION

The Energy Facilities Siting Council (EFSC) is the primary mechanism through which Policy (28) will be carried out. The EFSC promulgates rules and regulations through which it will evaluate impacts in the manner described in this Policy.

Oil terminals not covered by the EFSC's jurisdiction are subject solely to such other policies of the CZM Program as may apply (see Policies 1-27).

--Energy Facility Siting Council (MGLA, Ch. 164, SS. 69 F-R) - has jurisdiction over determining the need for and siting of oil terminals. Such facilities include any terminal associated with an oil facility or capable of storing more than 500,000 barrels of oil or refined oil products; and terminals associated with electric generating facilities of 100 MW capacity or more.

Policy (29) Consider the siting of oil tank farms in areas outside the coastal zone.

Certain oil storage facilities are coastally dependent, and, as such, must be accommodated within the coastal zone. These include (1) facilities used for storage of bunker fuel and fuel used by oil-fired electric generating plants located on the coast; (2) facilities used to store oil for trans-shipment by coastal tankers and barges; and (3) surge oil storage at oil terminals. For these coastally dependent kinds of storage facilities, the EFSC, in exercising its jurisdiction over oil storage facilities, has agreed to consider the environmental impacts and effects on port operations by making the same assessments called for under Policy (29) and by not approving the siting of oil storage facilities in areas designated as Areas for Preservation or Restoration.

Other oil storage facilities do not have to be located on the coast. Prior to approving these kinds of oil storage facilities in the coastal zone, the EFSC has agreed to examine the need for the facility,

alternative sites outside the coastal zone, and the relative impacts of siting storage facilities at each alternative site. Specifically, the EFSC shall:

- assess whether additional oil is needed to provide an adequate supply of energy; whether existing storage capacity is sufficient, and if so, whether such capacity is available for use by the applicant,
- evaluate the use of alternative sites, for non-coastally dependent tank farms including at a minimum, one site outside the coastal zone,
- assess the relative impacts of siting storage facilities at each site including air and water quality as well as land use impacts, and if applicable, impacts associated with tanker truck and impacts on existing or future port operations,
- consider whether the oil storage facilities optimize use of existing infrastructure and are accessible to pipelines for receipt of oil.

Assessment of these factors will provide for adequate balancing of potential environmental impacts while providing necessary energy supplies at the lowest possible cost.

In addition, oil storage facilities should not be sited in areas designated by the Secretary of Environmental Affairs as Areas for Preservation of Restoration/Areas of Critical Environmental Concern.

In the consideration of inland siting of oil tank farms, CZM is prepared to fund a special study to examine, jointly with oil terminal operators, possible sites for locating new oil storage capacity outside of the coastal zone. Such a study should examine pipeline corridors and costs, as well as the effects of such inland siting on the economics of oil distribution.

#### IMPLEMENTATION

The Energy Facility Siting Council (EFSC) is the primary mechanism through which Policy (29) will be carried out. The EFSC shall promulgate rules and regulations through which it will consider alternatives in the manner described under this Policy. Oil storage facilities not covered by the EFSC's jurisdiction are solely subject to such other policies of the CZM Program as may apply (see Policies 1-27).

--Energy Facility Siting Council (MGLA Ch. 164, SS. 69 F-R) - has jurisdiction over determining the need for and siting of oil storage facilities. Such facilities are defined as any unit capable of storing more than 500,000 barrels of oil or refined oil products.

Policy (30) Weigh the environmental and safety impacts of locating proposed coastal gas facilities at alternative sites.

Certain gas facilities, because they rely on cryogenic pipelines to transfer gas or feedstocks from ship to shoreside storage, are coastally dependent, and must be accommodated within the coastal zone. Other gas storage and manufacturing facilities, because they are fed by natural gas pipelines or by tanker truck or rail are not coastally dependent and may not have to be located in the coastal zone. All gas storage manufacturing facilities may pose potential hazards to public safety. In exercising its authority over the siting of coastally dependent gas facilities, the Energy Facility Siting Council has agreed to weigh alternative sites within the coastal zone and the relative impacts of locating facilities at these sites. For non-coastally dependent gas facilities, the Council has agreed to continue to consider alternative inland sites. In evaluating alternative sites, EFSC will:

- assess the risks to public safety, including the potential magnitude of danger and size of populations affected,
- evaluate the size of buffer zones available,
- assess air and water quality and land use impacts associated with the use of each site, and
- assess, if applicable, the impacts of siting gas facilities on existing or future port operations.

Assessment of these factors will provide for adequate balancing of potential environmental impacts while providing necessary energy supplies at least possible cost.

In addition, gas facilities shall not be sited in areas designated by the Secretary of Environmental Affairs as Areas for Preservation or Restoration/Areas of Critical Environmental Concern.

IMPLEMENTATION

The Energy Facility Siting Council (EFSC) is the primary mechanism through which Policy (30) will be carried out. The EFSC shall promulgate rules and regulations through which it will consider alternatives in the manner described under this Policy.

Gas facilities not covered by the EFSC's jurisdiction are solely subject to such other policies of the CZM Program as may apply (see Policies 1-27).

--Energy Facility Siting Council (MGLA Ch. 164 SS. 69 F-R) - has jurisdiction over determining the need for and siting of gas facilities. Such facilities are defined as any unit including associated facilities designed for or capable of the manufacture or storage of gas.



Policy (31) Consider alternative sites, including inland locations, prior to siting electric generating facilities in the coastal zone.

The Coastal Zone Management program recognizes the need to provide for consumer demand and supports accommodating new power plants when needed. CZM intends to meet this exigency by studying the coastal zone resources and providing for needed electric energy development within the zone in a manner which will cause minimum disturbance to these resources and the people dwelling therein. In line with this objective and following the charge to the Siting Council, each applicant will be asked what investigations it has made to find alternative sites, including inland ones. It takes a minimum of nine years from conception to commercial operation to complete a coal-fired plant while a nuclear generating unit now takes eleven years. CZM's approval procedures will be designed to handle and process applications rapidly in order to not increase this time span.

Siting electric generating facilities in some areas of the coastal zone may pose fewer risks of environmental damage than at others. Less alteration to coastal ecosystems may be entailed; the likelihood of damage to juvenile fish may be reduced by locating power plant intakes in open water rather than in estuaries. On the other hand, inland siting may pose risks of other kinds of environmental harm and prove costlier. In order that these various environmental impacts and economic costs are balanced in the siting process, the EFSC has agreed prior to approving the siting of an electric generating facility in the coastal zone, to consider both a site outside the coastal zone and at least one other within the coastal zone. Specifically, the Council shall:

- weigh the air and water quality, noise, and visual impacts associated with siting the facility at the alternative and proposed sites,
- consider the impacts of transmission line corridors that may be required at each alternative site, and
- assess, if applicable, the effect of siting the facility on present and future port operations.

In addition, electric facilities should not be sited in areas designated by the Secretary of Environmental Affairs as Areas for Preservation or Restoration/Areas of Critical Environmental Concern.

IMPLEMENTATION

The Energy Facility Siting Council (EFSC) is the primary mechanism through which Policy (31) will be carried out. The EFSC shall promulgate rules and regulations through which it will consider alternatives in the manner described under this Policy.

Electric facilities not covered by the EFSC's jurisdiction are solely subject to such other policies of the CZM program that may apply (see Policies 1-27).

--Energy Facility Siting Council (MGLA Ch. 164, SS. 69 F - R) - has jurisdiction over determining the need for and siting of electric facilities. Such facilities are defined as any bulk generating unit including associated buildings and structures with a design capacity of 100 MW or more; any new transmission line of more than one mile in length and 69 KV or more designation; and any ancillary structure, including but not limited to fuel storage facilities.

Policy (32) Consider alternative sites, including inland locations, for refineries. For deepwater ports consider alternative coastal sites to ensure that harm to the marine environment is minimized.

In reviewing refinery proposals, the Energy Facility Siting Council has agreed to evaluate alternative sites both within and without the coastal zone. Specifically, the Council shall:

1. assess whether sufficient acreage is allotted for a buffer zone,
2. assess air, water quality, noise, and land use impacts associated with siting the facility at the alternate and proposed sites,
3. evaluate alternative cooling systems other than "once-through cooling," and
4. assess the impacts associated with the generation, if any, of hazardous wastes.

A deepwater port is by nature coastally dependent. The offshore unloading facilities and pipeline to shore must be in coastal waters. The onshore tank farm is not coastally dependent and would be assessed according to Policy (29).

In exercising its authority over deepwater ports and associated facilities, the EFSC has agreed to:

- assess the need for a new deepwater port, including determining whether existing capacity is available and would fulfill the need, whether the deepwater port would replace or supplement existing marine terminals.

Where the EFSC has approved the need for a new deepwater port, the EFSC has agreed to consider social, economic and environmental impacts by:

- assessing whether any cost savings due to transport costs would accrue to the customer,

- assessing whether harbor congestion and ship traffic would be reduced,
- assessing the impact on existing and future port operations (including marine terminals and other marine industries),
- assessing the change in environmental impacts if the deepwater port is to replace existing terminals or assessing the added environmental impacts if the deepwater port is to supplement existing terminals including but not limited to chronic oil discharge, major oil discharge due to tanker groundings, collisions, and pipeline rupture, oil spill trajectories from proposed sites, impact of pipeline construction, impact of tank farm construction and operation,
- assessing the risks of environmental damage to designated Areas for Preservation or Restoration,
- assessing air, water, and land use impacts associated with the proposed and alternative sites, and
- assessing whether the deepwater port can optimize use of existing infrastructure and is accessible to pipelines for distribution of oil.

Assessment of these factors will provide for adequate balancing of potential environmental impacts with the provision of necessary energy supplies at the lowest possible cost.

In addition, refineries and deepwater port facilities should not be sited in areas designated by the Secretary of Environmental Affairs as Areas for Preservation or Restoration/Areas of Critical Environmental Concern.

#### IMPLEMENTATION

The Energy Facility Siting Council is the primary mechanism through which Policy (32) will be carried out. The Council shall promulgate rules and regulations through which it will consider alternatives in the manner described under this Policy. For a deepwater port, gubernatorial approval and CZM consistency also is required under the terms of the federal Deepwater Port Act.

--Energy Facility Siting Council (MGLA Ch. 164, SS. 69 F-R) - has jurisdiction over determining the need for refineries and deepwater ports. Such facilities are defined as any new unit, including associated buildings and structures, designed for, or capable of, the refining, storage of more than 500,000 barrels, or transportation of oil or refined oil products which is greater than one mile in length.

--Deepwater Port Licenses (P.L. 93-627) - are granted by the U.S. Secretary of Transportation. Conditions for licensing include joining an oil spill liability fund; consistency of the port with national

interest and policy; non-interference with navigation and international law; use of best available technology to prevent adverse environmental impacts; consistency with the state Coastal Zone Management Program; and approval by the Governor of the adjacent state. Through this Act, the Commonwealth has direct authority to approve or deny a deep-water port beyond the three-mile limit.

Policy (33) In exploiting indigenous or alternative sources of energy (off-shore oil and gas, coal, solar, wind, and tidal power) and offshore mining, minimize, to the extent practicable, adverse impacts on the marine environment, especially with respect to fisheries, water quality, and wildlife, and on the recreational values of the coast.

Narragansett Basin coal and off-shore oil and gas resources on Georges Bank may provide indigenous sources of energy for New England. In addition, increased attention is being devoted to developing and making use of alternative energy sources--most notably solar and wind power. Since these latter alternatives are likely to pose considerably less environmental impacts than other energy sources, CZM strongly endorses efforts to develop them. However, in developing all of these much needed energy sources, special care must be exercised to avoid harm to the resources of the coast that already provide benefit to man. The most important of these are the fishery resources of coastal waters (including known spawning areas and traditional fishing grounds); the quality of coastal waters which serves to maintain the health and harvestability of coastal fisheries and from which man derives recreational benefits; wildlife wintering, nesting, and migratory stopover areas; and the recreational resources of the coast, particularly its bathing beaches.

#### IMPLEMENTATION

The keys to implementing this policy are the role CZM will play in monitoring and reviewing the OCS leasing and development process, the exercise of the federal consistency provisions of the Coastal Zone Management Act to such federal actions as pertain to the exploitation of OCS resources, coal, and alternative energy sources; and the state's off-shore mineral and waterways licensing functions, Ocean Sanctuaries protective function, and licensing of oil and gas pipelines by the Energy Facility Siting Council.

--CZM Role in Reviewing OCS Exploration and Development - CZM has been and will continue to be active in reviewing the OCS leasing process, suggesting tracts that should be withdrawn from sale either because of their value for fisheries or because their proximity to shore and the attendant risks of oil spills reaching recreational beaches and wildlife migratory stopover areas. Through review of Environmental Impact Reports prepared on OCS leasing and development actions and on U.S. Geological Survey operating orders specifying measures to be taken when drilling, CZM will continue to advise the federal government on possible adverse impacts to the resources of Massachusetts' coastal waters and on measures that might be taken to minimize such impacts.

CZM will also review for conformance to CZM policies (1) federal leasing actions; (2) plans subject to the U.S. Department of Interior for exploration or development or production from any OCS lease area, and (3) applications for pipeline rights of way. This opportunity for such review by CZM programs is provided by Section 307 (c)(3) of the Coastal Zone Management Act as amended in 1976. Such federal actions will be deemed consistent with the CZM program if:

--construction in Areas for Preservation or Restoration is avoided,

--risks of environmental harm to fish spawning areas are assessed and minimized,

--necessary dredging, spoil disposal, and construction of structures minimize damage to the marine environment,

--risks of oil and gas spills and possible trajectories are evaluated and appropriate protection measures taken,

--potential damage or interference to traditional fishing grounds is evaluated and avoided,

--placement of structures in geologically hazardous areas is avoided, thereby minimizing such risks as pipeline breakage,

--disposal of drilling muds and drill cuttings does not damage spawning areas and fishing resources,

--potential harm to wintering, nesting, or migratory stop-over areas for wildlife is assessed and minimized, and

--planned placement of on-shore facilities conforms to Ports and Harbors policies.

--CZM Assistance and Planning - In conjunction with the Lieutenant Governor's Office of Federal-State Relations, the Office of State Planning, and the Energy Policy Office, CZM will continue to provide technical assistance to communities on on-shore facilities connected with OCS developments. Also, CZM in conjunction with other state agencies, will work with communities to make use of Coastal Energy Impact funds made available under the Coastal Zone Management Act Amendments of 1976 to communities to help them shoulder additional costs incurred by accommodating coastal energy facilities. In addition, CZM will continue to participate in special governmental studies for the New England region on possible OCS pipeline corridors, OCS impacts and the like.

--Federal Consistency - Apart from the review of plans submitted to the U.S. Department of Interior for exploration, development, or protection of OCS lease areas, CZM will review for consistency with other CZM policies applications for federal licenses or permits and federally assisted projects for coal or other mineral mining and

development of alternative sources of energy--tidal power, ocean wind-mills, and other potential alternatives.

--Division of Mineral Resources (MGLA, Ch. 21 S. 54) - Is empowered to license the exploration for mineral resources in Massachusetts' coastal waters and the seabed and to lease rights for extraction of such mineral resources as have been discovered. A lease for extraction of a mineral resource may not be issued until a public hearing is held and until information is made public on the quantities, quality, and location of the mineral resource and on the extent and risk of harm to marine and other natural resources of the proposed mining. CZM will work with DEQE to issue regulations for the licensing and leasing authority so that, to the extent permissible in law, CZM policies are adequately incorporated in the off-shore mineral licensing and leasing process.

--Waterways Program (MGLA Ch. 91) - Has licensing authority over tidelands, harbors, and certain rivers below the high water mark. Activities covered by such licenses include filling, wharf construction, bridges, and pipelines. DEQE, a trustee over public lands below low water, issues licenses and not permits for the permission to interfere with those public lands and public rights of fishing, fowling, and navigation. Given the trusteeship function of the Waterways Program and its mandate through the MEPA statute to administer licensing so as to minimize and prevent damages to the environment, off-shore activities in Massachusetts coastal waters can be licensed to conform to this policy.

--Ocean Sanctuaries (MGLA Ch. 132A, 22. 13-17) - Five ocean sanctuaries have been created by state legislation to protect all state waters except those from Swampscott to Marshfield and those in Mt. Hope Bay. While the terms of the five sanctuaries differ, in general, such activities as the removal of sand, gravel, or minerals, dumping or any new waste discharge and placement of permanent structures on or below the seabed are prohibited. Shore protection, water navigation aids, and fish harvesting are permitted. These authorities together with the charge to the Department of Environmental Management to care and control the sanctuaries will be relied upon to ensure that mining and placement of structures on or in the seabed minimize damage to the marine environment.

--Energy Facility Siting Council (MGLA Ch. 164, S. 69 F-R) - Has jurisdiction over determining the need for and siting of pipelines. Such facilities are defined as any new pipeline for the transmission of gas of more than one mile in length and having a normal operating measure of 100 pounds per square inch or more and any new pipeline for the transport of oil or refined oil products greater than one mile in length. As the seabed and water column are public lands and waters, over which EOEA serves as trustee, the EFSC must give special weight to environmental considerations in siting off-shore pipelines.

#### TECHNICAL NOTES AND SOURCES

1. Petroleum consumption figures are taken from A. D. Little, Inc., Historical Data on New England's Energy Requirements, prepared for NERCOM, 1974; estimate of proportion of Massachusetts demand served by marine terminals derived from share of population in eastern Massachusetts compared to state total and on petroleum share by county taken from U.S. Bureau of Census, 1967 Census of Business, "Petroleum Bulk Stations and Terminals," Washington, D.C.
2. New England Regional Commission, Energy Flows in New England, 1976.
3. Surge storage is that needed to hold oil as it is unloaded from a tanker, until it can be transferred to permanent storage. Capacity needed is roughly one to two times tanker size per berth.
4. Petroleum consumption projections taken from A. D. Little, Inc., Preliminary Projections of New England's Energy Requirements, prepared for NERCOM, 1974.
5. A. D. Little, Inc., Effects on New England of Petroleum-Related Industrial Development, prepared for NERCOM, 1975, Vol. III, pp. III-20, III-21.
6. See Ports and Harbors section, technical note number 3.
7. Intermetric, The Petroleum Distribution Network for New England, prepared for NERCOM, 1974.
8. Federal Energy Administration, Strategic Petroleum Reserve Draft Environmental Impact Statement, June 1976.
9. A. D. Little, Inc., Preliminary Environmental Study of Alternative Methods of Supplying Petroleum Products to Eastern Massachusetts, prepared for MASSPORT, 1973, Vol. III, p. III-6-111.
10. The Massachusetts coast from the Cape northward is classified as an area with the potential for major destructive earthquakes. The California coast is in the same category. Coffman, J.L., and Von Hake, L., Earthquake History of the U.S., U. S. Department of Commerce, 1972.
11. Oil and Gas Journal, August 23, 1976, p. 83.
12. Costs to transport oil by pipeline are on the average 11% of the costs of truck transport; Hulbert, R.C., "Principles of Pipeline Economics," Association of Oil Pipelines Educators Tour, July 1974.

13. "Relocating existing shorefront tanks inland can be phased over a period of ten-twenty years as tanks have to be replaced, waterfront property taxes increase, and alternative tax producing water-related development are proposed. Since tank farms provide less tax per acre than virtually any other industrial use, it should be possible for each city to maintain or increase its base through intensive development of only a portion of the relocated tank farm acreage, with the balance for recreation, public access to the water and other public uses." U.S. Army Corps of Engineers, People and the Sound, Marine Transportation, A Planning Report Prepared for the New England River Basins Commission, Long Island Sound Regional Study, February 1975, p. 62.
  14. New England Regional Commission, Gas Industry Development in New England, Analysis of Alternatives, 1975, pp. 4, 6.
  15. Massachusetts Energy Policy Office, Report on Natural Gas in Massachusetts, October 1974, p. 14.
  16. Personal communication with Algonquin Gas Company.
  17. Descriptions of existing gas facilities extracted from: New England Regional Commission, Gas Industry Development in New England, Analysis of Alternatives, 1975, and Massachusetts Energy Policy Office, Natural Gas, November 1975.
  18. Raj, P.K., and Kalekar, A., "Fire Hazard Presented by a Spreading, Burning Pool of LNG on Water," Paper No. 73-25, Western States Section/The Combustion Institute, Fall 1973.
  19. Booz, Allen, Hamilton, Inc., Electric Power Demand and Supply in New England: A Review of Trends and Forecasts, prepared for NERCOM, 1975; NEPLAN, New England Load and Capacity Report, January 1976; and estimates developed by Massachusetts Energy Facilities Siting Council.
- Taken directly from Commonwealth of Massachusetts, An Economic Development Program for Massachusetts, 1976.
20. "Both fossil fuel and nuclear fired thermal electric generating plants operate on the same general principle. Steam is created by burning the fuel substance and used to power a turbine which turns an electric generator. The spent steam is condensed and the water returned to be revaporized into steam to start the cycle anew. The steam condenser is cooled with water that is either drawn continually from a natural water body (once-through cooling) or recirculated through an artificially constructed cooling system (closed cycle)." Taken from Clark and Brownell, Electric Power Plants in the Coastal Zone: Environmental Issues, American Littoral Society, 1973, p. III-1.
  21. Personal communication with Boston Edison.



22. Ibid and Ball, R.H., and Salter, R.G., California's Electricity Quandry: Planning for Power Plant Siting, Volume II, the Rand Corporation, 1972, pp. 76-80.
23. For an excellent discussion of power plant costs, see Massachusetts Energy Policy Office, The Economics of Nuclear Power: A New England Perspective, December 1975.
24. Once-through cooling systems for a 1000 MW plant can use up to 500,000 gallons of water per minute, equivalent to 1100 cubic feet per second (cfs). Records kept by the U. S. Geological Survey show that average daily flow at the Merrimack River at Lowell is 7271 cfs.
25. Raytheon and Frederick R. Harris, Inc., MASSPORT Marine Water Terminal Study, May 1974.
26. New England River Basins Commission, Resource and Land Investigations Program, Estimates for New England, November 1976.
27. Massachusetts Coastal Zone Management Program, Oil Refinery Development in Massachusetts, Draft, May 1976.
28. A. D. Little, Inc., Effects on New England of Petroleum-Related Industrial Development, Volume III, prepared for NERCOM, 1975.
29. New England River Basins Commission, Resource and Land Investigations Program, Onshore Facilities Related to Offshore Oil and Gas Development, Factbook, November 1976.
30. Emissions from oil refineries must meet the following air quality standards:
 

Particulates:	1.0 lb/1000 lbs of coke burnoff
Carbon Monoxide:	30% opacity 0.5% p by volume
Hydrogen Sulfide Content:	fuel utilized in processing machinery may not exceed 0.1 grams of hydrogen sulfide per dry cubic foot at standard conditions
Source:	40 CFS 50; 39 PR 9315, March 8, 1974
31. U.S. Coast Guard, Seadock Deepwater Port Final Environmental Impact Statement, 1976.
32. Much of the information on OCS facilities has been extracted from Massachusetts Office of State Planning, Offshore Oil Development, Implications for Massachusetts Communities, November 1976.

33. Weston Observatory, Interim Report of the Pennsylvania Coal-Bearing State of the Narragansett Basin, Massachusetts and Rhode Island. June 1976-December 1976, 32 p.
34. New England Federal Regional Council, A Report on New England Hydroelectric Development Potential, Energy Resource Development Task Force, Hydroelectric Facilities Work Group, 1976, 120 p.
35. Sacks, I., The Geological, Economic, and Technological Prospects for Narragansett Basin Coal, Massachusetts Science and Technology Foundation Publication, 1975, 23 p.



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## General Development and Public Investment

## GENERAL DEVELOPMENT AND PUBLIC INVESTMENT

### SUMMARY OF FINDINGS

The policy recommendations of the preceding sections have dealt with the management of human activities immediately on or adjacent to specific types of significant resource areas valued for their ecological or aesthetic importance, or for their value to recreation and marine-related commerce. CZM recognizes that other parts of the coastal zone will continue to be the loci of substantial economic growth and development within Massachusetts. Resource capabilities in some of these other parts of the coastal zone can support, for example, the low density residential development that offers an attractive alternative to urban living. Other areas can support and benefit from more intensive development. In these areas, the state has only limited interests, since many issues related to the form and rate of development in coastal communities are largely matters of local concern. Consistent with citizen concerns expressed through the CZM advisory committees and the local growth policy committees, CZM will not interfere with matters that are not of statewide significance.

Instances where issues of statewide significance require state involvement in management have been addressed in previous sections. These included primarily: (1) when a proposed action would be located in inter-tidal areas or in other areas seaward of the limit of the 100 year coastal flood plain; (b) when a maritime oriented use would compete with a non-maritime dependent use; (c) when a proposed project would adversely impact a public recreation beach; (d) when a proposed project would adversely impact a designated historic district or site; and (e) when an energy facility is proposed to be sited in the coastal zone. This section addresses three additional areas of statewide concern: (a) when slope, geological conditions, and soil permeability would not support extensive use of subsurface disposal systems; (b) when proposed uses or activities would require state or federal permits for the discharge of substances into the air or waters of the Commonwealth, and (c) when state or federal investments would be required to provide supporting infrastructure.

Inland of inter-tidal areas along the shoreline, the State Environmental Code and existing laws relating to inland wetlands provide protection to critical areas of hydrological or ecological significance. Existing permit requirements for point source discharges regulate pollution of surface waters throughout the coastal zone. Administration of these laws and permit processes will continue as in the past.

With regard to the provision of sewerage and treatment facilities or other types of public investments, CZM finds that the public interest can best be served by using these investments to provide incentives for new development to locate in existing development centers or to be clustered if sited in outlying areas (e.g., an industrial park). This strategy maximizes the efficiency or prior

investments and will promote the revitalization of existing urban and community centers, consistent with the developing statewide growth policy. CZM expects to take a very active role in using public investments to support sustained growth in those areas where it would be consistent with stated CZM objectives.

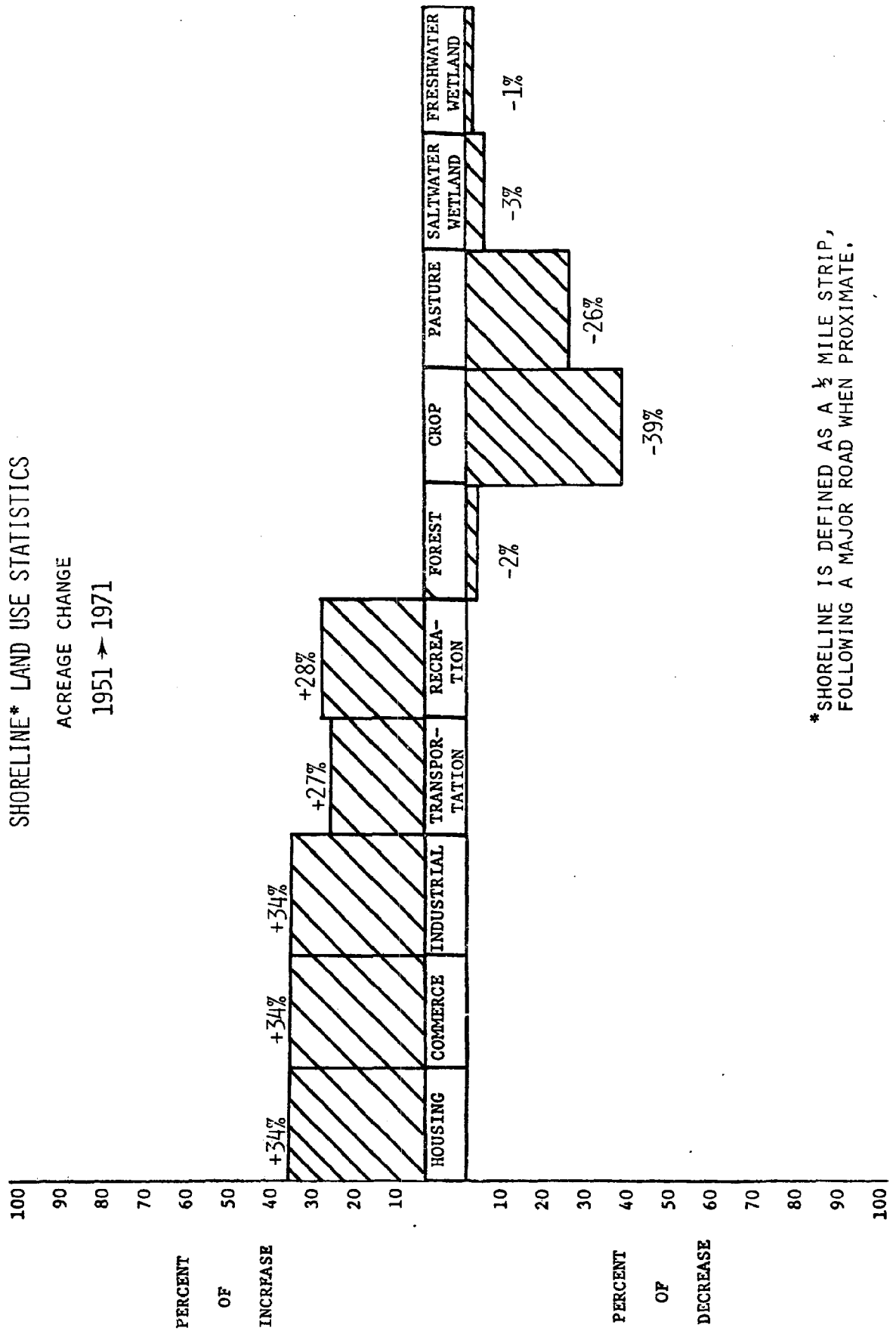
Where requested, CZM will also provide technical assistance to localities to develop zoning and other land use controls which encourage the consolidation of future development in their areas. Further, CZM intends to foster increased communication between the public and private sector to facilitate conformance of private investment with public policy.

#### GROWTH IN THE COASTAL ZONE

Since 1951, the amounts of acreage consumed statewide by housing and by industrial and commercial development have increased 85% and 103% respectively, while throughout the entire coastal zone (as approximated by a half-mile strip inland from the shoreline) acreage consumed by each of these two broad categories of development has increased by only 34%.<sup>1</sup> The lower rate of growth during this period, however, is due only to the fact that many areas of the coastal zone had already been extensively developed by the early fifties. This was the result of the coastal zone's long-standing heritage as the Commonwealth's locus of marine related industries, recreational amenities, and major urban centers.

Nonetheless, growth in the coastal zone in the last twenty years has been significant as shown in the bar graph below (Figure 1) - the quantity of open, agricultural and undeveloped natural lands that have been urbanized amounts to approximately one third of the acreage that had been undeveloped in 1951. The relative proportion of land consumed by various uses is shown in the following graph (Figure 2) - housing is by far the dominant use of developed lands, consuming roughly three-fourths of the developed land within a half-mile of the shoreline.

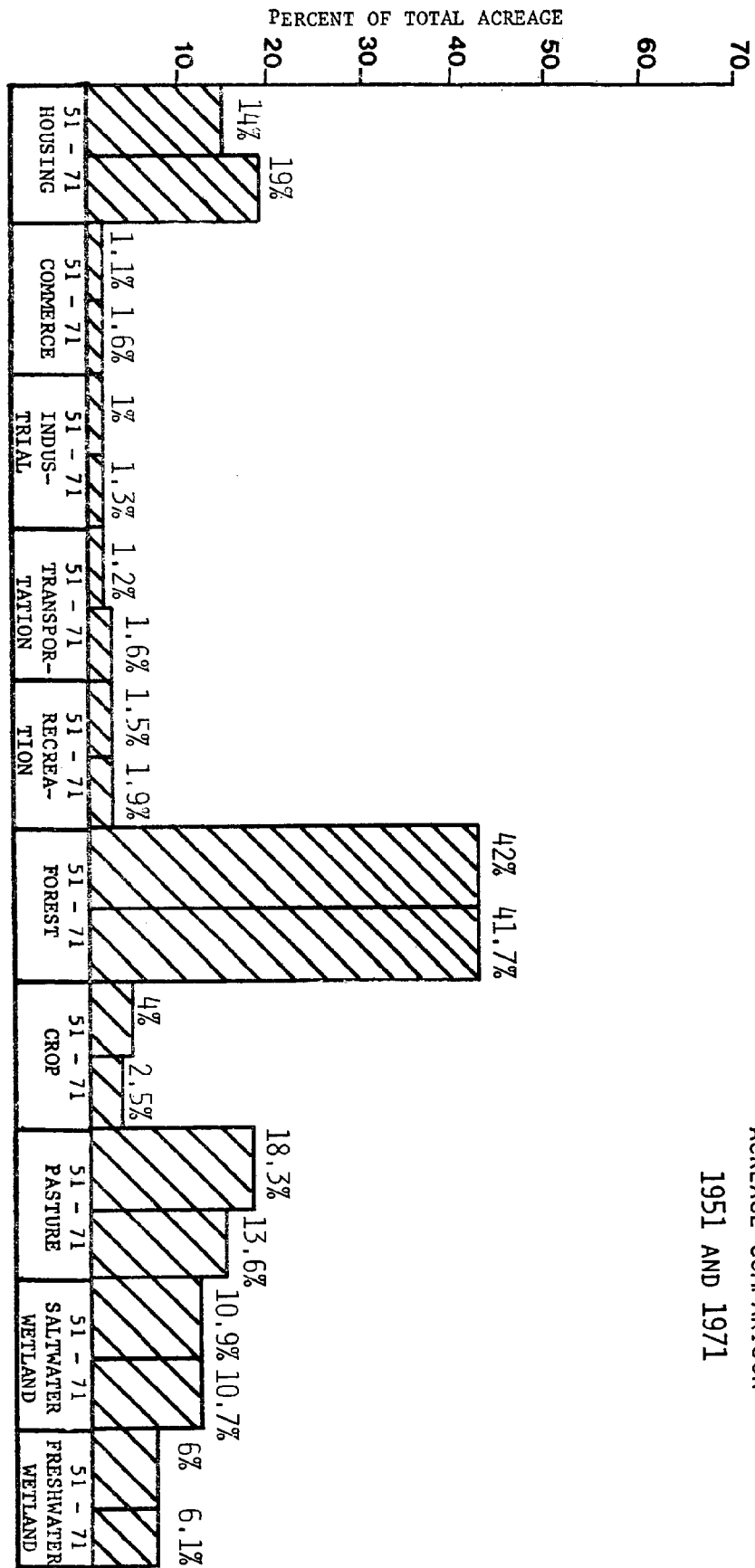
Furthermore, while growth in the coastal zone taken as a whole has begun to slow relative to the rest of the state, growth within specific regions of the coastal zone, most notably the Cape and the Islands, has been and is expected to continue to be substantial. As a result of increased leisure time and improved transportation access, demand for second home development in these areas is intense. It is projected, for example, that development of new dwelling units on the Cape will range from 1900 to 2700 units annually from 1975 to 1994.<sup>2</sup>



\*SHORELINE IS DEFINED AS A ½ MILE STRIP,  
FOLLOWING A MAJOR ROAD WHEN PROXIMATE.

FIGURE 1

# SHORELINE\* LAND USE STATISTICS ACREAGE COMPARISON 1951 AND 1971



\*SHORELINE IS DEFINED AS A 1/2 MILE STRIP,  
FOLLOWING A MAJOR ROAD WHEN PROXIMATE.

FIGURE 2

## COMMUNITY, STATE AND FEDERAL CONCERN FOR UNCONTROLLED GROWTH

In response to the Massachusetts Growth Policy Act of 1975, communities throughout the state have been analyzing the costs and benefits of growth in their areas. Almost unanimously, localities in the coastal zone cite in their "Growth Policy Statements" the following as the most pressing concerns relating to the nature of growth in their towns:

- loss of community character resulting from traffic impacts, conversion of outlying rural areas to sprawl development, or deterioration of older community centers
- the rising costs of municipal services and increasing burdens placed on local property tax revenues
- degradation of water quality in streams, lakes, and coastal waters
- contamination or depletion of local water supplies

While some of these communities appear to favor growth, many others indicate a resistance to further development. Regardless of their attitude, however, all seem to point to a need for coming to grips with the manner in which future growth should occur. Additionally, many communities have voiced a concern regarding further state or federal involvement in local land use decision-making. Given Massachusetts' long standing tradition of "home rule" most communities regard issues such as effects of growth and development on community character as issues of local concern that are best managed through zoning or other local controls. Such a position is not unjustifiable - local officials and planning professionals are likely to be more sensitive to local values and thus are in a better position to develop zoning codes or other local management measures which respond adequately to community needs.

As a part of a process to develop a statewide policy towards growth which can better accommodate the needs of local communities and improve the economic well being of the Commonwealth, the Office of State Planning has recently completed a comprehensive study of the effects of state funding programs and infrastructure investment on development patterns throughout the state.<sup>3</sup> The results of this study indicate that the aggregate of major infrastructure investments such as highways, waste treatment plants, and water supply systems, together with the implementation of other social programs such as those providing funding assistance for educational programs and facilities, have been instrumental in affecting the pattern of growth and development in some areas. These programs unquestionably have had innumerable beneficial effects, such as significant improvement in the quality of the Commonwealth's waters. However, the study indicates that adverse effects have also been partially induced by the collective implementation of these investments and programs, including primarily:



- the inefficient use of land and unnecessary public and private costs ensuing from that inefficiency;
- the deterioration of older community and regional centers;
- inequities among households and communities resulting from unequal access to jobs, housing, open space and quality of municipal services; and
- an inadequate level of economic growth and residential development.

In response to these findings, OSP has advocated a growth policy for the Commonwealth which is aimed basically at directing future development to existing urban cores and town centers by: upgrading existing infrastructure investments and rehabilitating older structures and neighborhoods, developing a wider spectrum of housing choices, encouraging new commerce and industry to locate near existing centers, improving employment opportunities through the expansion of existing industries, and protecting critical natural areas and recreation resources. These policy recommendations are also supported by the Department of Community Affairs, which through its elderly housing, neighborhood improvement, scattered site family housing, and rental assistance programs is striving to encourage the concentration of housing resources in older, established neighborhoods.

On the federal level, there is an increasing awareness of the secondary impacts generated by federally supported infrastructures such as sewer systems and highways.<sup>4</sup> Public infrastructure programs established to achieve improvements in environmental quality also provide much needed construction jobs and stimuli to local economies. However, if demand for development is high and other required infrastructure and services are available, inappropriate implementation of the programs may accelerate unplanned growth, pressure for development of critical environmental areas, increased traffic congestion and air pollution, and other secondary effects on water quality and visual quality, all of which can offset the benefits to environmental quality which the programs are designed to achieve. Additionally, these programs will often require expenditure of allotted funds within a short, specified time frame, precluding an adequate level of planning and evaluation of alternatives and potential consequences. Thus state and local entities must be prepared to guide infrastructure investments wisely, without sacrificing needed investment capital or future environmental quality.

#### THE STATE ENVIRONMENTAL CODE AND INLAND WETLANDS ACTS

Assuming that demand for growth exists in a particular area, the pattern of future development will be largely determined by a number of factors relating to the availability and suitability of land, including:

1. limitations on the use of subsurface waste disposal systems in areas with poor resource capabilities (e.g., the State Environmental Code)
2. constraints on the use of lands in or adjacent to sensitive ecological resources (e.g., the Wetlands Protection Act)
3. anti-degradation provisions or permit requirements governing point sources of air and water pollution (e.g., NPDES permits)
4. local zoning provisions, subdivision regulations, and building code requirements
5. the amount of land either acquired or controlled by easement for conservation or open space use
6. access to supporting infrastructure and public services such as roads and sewage treatment facilities

The purpose of this sub-section and the two subsequent sub-sections is to discuss how some of these factors operate to shape development patterns in the coastal zone.

The State Environmental Code, Title V, governs the location, design, and operation of subsurface disposal systems in Massachusetts.<sup>5</sup> It is administered primarily by local boards of health who review applications for construction of individual septic systems for conformance to standards and regulations promulgated by the Department of Environmental Quality Engineering. The Code requires that deep observation holes and a percolation test be performed at the site of a proposed system to determine the characteristics of the soil in the system's leaching area, depth to ground water, the presence of bedrock and other impervious material, and the suitability of the soil for absorbing wastes. Once these factors have been determined, the code prescribes standards for:

1. the capacity of the system based on expected occupancy and use,
2. the size of the facility's leaching area,
3. minimum distances to wells, cellars, surface waters, watercourses, property lines, and slopes,
4. minimum depths below the leaching facility to pervious soils.

The principal effect of the Code is to prevent contamination of surface waters and ground water supplies by restricting the use of subsurface disposal systems in areas with steep slopes, bedrock or other impervious materials near the surface, and soils unsuited for adequate percolation and absorption of wastes. In areas where such

resource capabilities are predominant, development will be limited, unless public sewerage is provided to preclude the need for individual subsurface disposal systems.

The code is administered on a case by case basis by the local boards of health. However, it is possible to interpret soils data on a generalized level to graphically delineate areas in the coastal zone where the requirements of the code are likely to prohibit residential development or limit it to a low level of density, outside of already developed areas. The Summary Map (located in the back cover of this volume), which has been adapted from maps prepared for the South Eastern New England Study (NERBC, 1975), identifies these areas in the coastal zone. Soils suitabilities within the broad category depicted (which also includes inland wetlands discussed below) may vary, depending on deep hole observation and percolation tests results conducted at the time individual subsurface disposal systems are proposed.

Development in upland areas of the coastal zone may also be constrained by existing laws relating to the protection of inland wetlands. Inland wetlands are important ecological resources for a number of reasons:

1. They act as recharge areas to maintain ground water supplies and as discharge areas for replenishment of surface water supplies in times of limited rainfall.
2. They store flood waters, thereby reducing flood peaks and protecting downstream areas.
3. They absorb some nutrients which would otherwise enter surface water impoundments and cause eutrophication or other pollution problems.
4. They provide important wildlife habitat and support fishery resources.

In Massachusetts, local conservation commissions review development actions proposed for inland wetlands and condition notices of intent as with coastal wetlands (Wetlands Protection Act, MGLA Ch. 131, S. 40). Development activities are regulated to protect the qualities noted above. The use of inland wetlands is also restricted under orders issued by the Department of Environmental Management in accordance with MGLA Ch. 131, S. 40A.

#### POINT SOURCE REGULATION AND LOCATIONAL DECISIONS

Should a proposed use of activity involve the discharge of substances directly into the surface waters of the Commonwealth, a higher level of management is triggered than would be applicable to uses needing only to comply with the State Environmental Code or the

inland wetland acts. CZM does not advocate expansion of existing authorities over point sources of water pollution in the coastal zone. However, existing federal and state permit requirements can influence the location of certain types of development, as explained below.

As noted in Policy (3) of the Marine Environment Section, point sources of water pollution are regulated through the National Pollution Discharge Elimination System (NPDES) administered jointly by EPA and DWPC. In situations where compliance with effluent limitations or receiving water standards would be too costly, certain types of development may be precluded from locating in a given area. For example, some stream segments are classified "water quality limited," which means that advanced forms of waste treatment would be required for an industry or municipality to discharge into the segment. In addition, some surface waters are classified "anti-degradation," meaning that no new discharges are permitted upstream of any existing discharges. On Cape Cod, for example, all surface waters are classified "anti-degradation," which virtually precludes any new major point source discharges for locating on the Cape, unless alternative forms of treatment are employed, such as land application of wastes.

#### PUBLIC INVESTMENT AS AN INCENTIVE TO DEVELOPMENT

In a region where there is a moderate to high rate of demand for development, decisions as to which parcels within available land areas will be chosen for development may be strongly influenced by the aggregate of existing or proposed public investments such as highways, water supply systems, and sewage treatment systems. For example, improving access to an outlying area through a highway improvement which substantially reduces the time of travel from the outlying area to an employment center is likely to make the outlying area considerably more attractive to residential developers. This will be particularly true if there is an adequate supply of water to support growth and if sewage from individual homes can be satisfactorily disposed of using on-site septic systems in compliance with the State Environmental Code. The costs of developing these outlying parcels relative to parcels within developed areas will be substantially less expensive, since developers can exercise the greatest flexibility in the design of their developments - in other words they will be free to lay out property lines, collector roads, utilities, and other services independently of existing development patterns.

As this "leapfrogging" or "sprawl" development pattern continues, further development of the remaining undeveloped parcels may be constrained or prevented by the State Environmental Code because of poor soil characteristics, steep slopes, high ground water, or other factors. At this point in time, continuance of the growth pattern will be largely dependent on whether sewage treatment and collection facilities are made available to handle sewage disposal needs.

Provision of sewers would eliminate reliance on on-site sub-surface disposal systems, allowing developers to develop the remaining available parcels with reasonable assurance that they will be saleable, assuming market demand remains sufficient and water supplies are adequate.

Thus, while it is unlikely that provision of any one form of infrastructure will induce development of a particular area, collectively they may cause considerable secondary impacts on growth patterns and coastal resources. If planned and designed to promote focussed and consolidated growth rather than the sprawl development pattern discussed above, publicly financed infrastructure can be used to facilitate attainment of a number of benefits including:<sup>6</sup>

1. reduced pressure for development of outlying critical environmental resources, such as wetlands and floodplains,
2. minimized disturbance of previously undeveloped areas, thereby preserving open space and agricultural lands, and minimizing increases in runoff and sedimentation caused by clearance of vegetation and pavement of permeable soils,
3. enhanced community character and revitalization of urban centers and downtown waterfronts ,
4. improved efficiency of prior public investments in infrastructure where existing facilities are underutilized or can be upgraded without considerable replacement costs ,
5. improved energy efficiency, if clustering of development can reduce the frequency and length of automobile trips and provide for shared use of space heating and cooling facilities.

On the other hand, concentrating growth may not always be appropriate. For example, ambient air quality may be degraded if too many industrial sources of pollution are concentrated in one area or if clustering does not reduce vehicular use. In general, however, using infrastructure to provide incentives for development interests to locate proposed developments in existing development centers or to cluster new developments sited in outlying areas should provide benefits such as those outlined above.

In addition to infrastructure, other public investments such as the acquisition and development of a coastal recreation area or the redevelopment of an urban waterfront may provide the incentives to stimulate growth in a particular area within a developing region. The ways in which individual public investments in infrastructure and these latter types of investments contribute to overall development patterns are briefly outlined below.<sup>7</sup>

## TRANSPORTATION FACILITIES

Public investments in new highways or mass transit can induce growth primarily by changing the accessibility of employment centers or recreation facilities to permanent residential areas. The basic determinant of induced growth will be the supply of land within the vicinity of the transportation facility, relative to the rate of growth of the area, the area's attractiveness, and the significance of changes in travel times to work or recreation areas.

Construction of a rural interchange on highways with limited access will encourage development of automobile related services to cater to through traffic or may provide the stimulus for second home development, since previously inaccessible regions may now be within easy driving distances of major metropolitan regions. Suburban interchanges connecting local roads to beltways circumscribing urban centers will encourage the development of new industrial and commercial employment centers, which in turn will stimulate housing development in further outlying areas. Finally, construction of local highways with unlimited access and grade level intersections will encourage strip development unless controlled by local zoning.

Examples of growth stimulated by highway improvements are common in the Massachusetts coastal zone. Completion of Route 3 to the South Shore region substantially reduced travel times to this area and provided the stimulus for the significant growth that has occurred there since the fifties. Highway improvements to Cape Cod during the twenty year period from 1950 to 1970 (principally Routes 3, 24, 25 and 6) placed the upper Cape within commuting distance of the Boston metropolitan region and thus facilitated the second home development that has occurred throughout the Cape region.

Extension of rail transit facilities to outlying areas or implementation of "park and ride" systems may also serve to stimulate growth to the degree that commuters are willing to change their travel habits and land is available within walking or driving distance of the outlying stations. Furthermore, development around outlying stations may attract ridership which in turn will stimulate demand for more development.

While control over the routing and capacity of new transportation infrastructures and the access to it unquestionably provides the greatest opportunity for guiding future development patterns, the number of major transportation improvements currently planned for the coastal zone is limited, since the region's transportation network is virtually complete. Major transportation improvements that are likely to be implemented in the near future include (see map on following page):

1. Construction of a new 4 lane divided segment of Route 25 around Buttermilk Bay through Wareham to the Bourne Bridge.

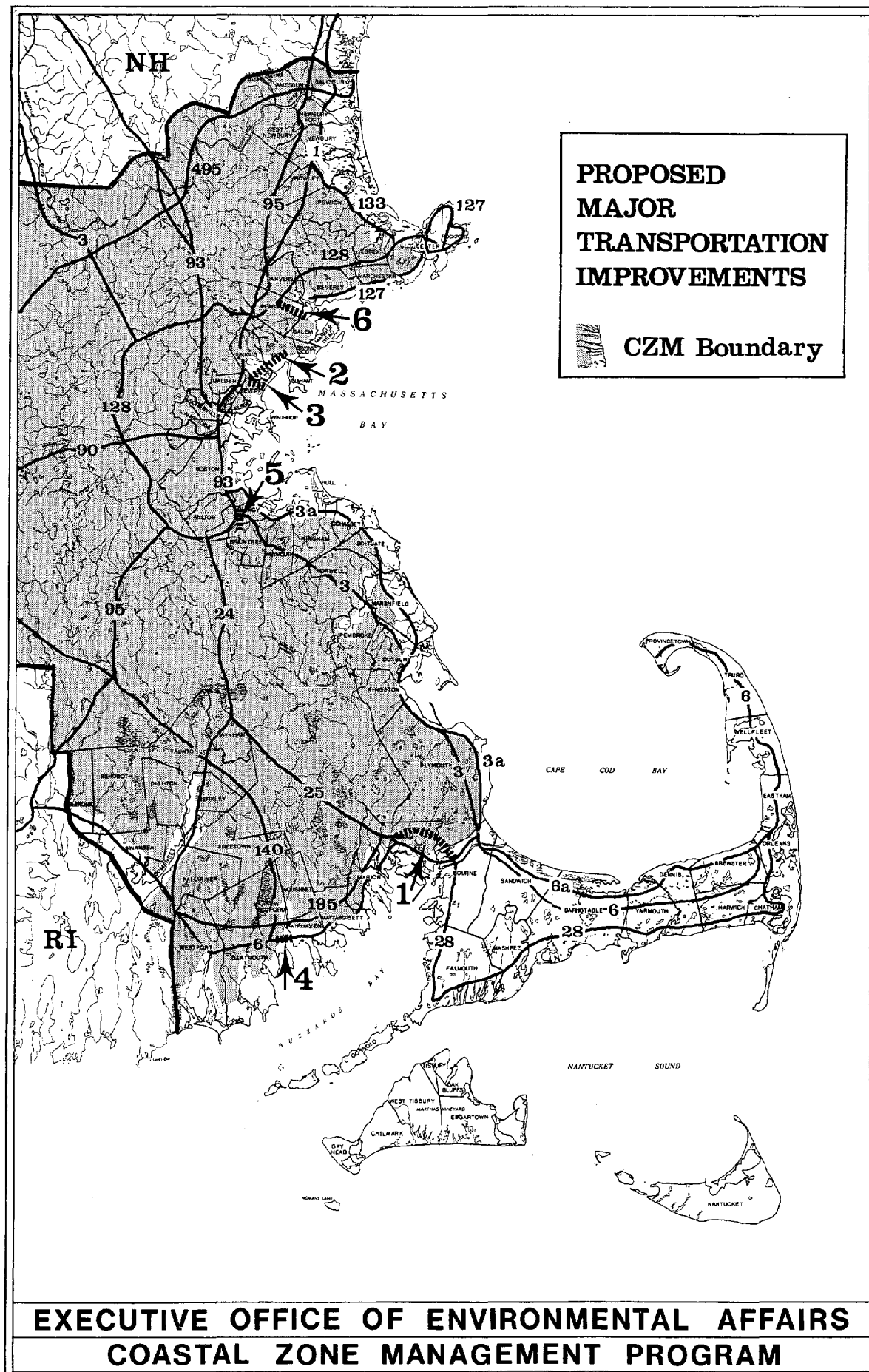


Figure 1 286

2. Extension of the Blue Line to Lynn on the North Shore using the Boston and Maine Railroad's right-of-way.
3. Construction of the Revere Beach Connector to serve the proposed redevelopment of Revere Beach.
4. Raising the New Bedford/Fairhaven Bridge in order to provide greater clearance for shipping vessels passing beneath.

Other proposed transportation improvements which would be located outside of the coastal zone but which, to a limited extent, would affect access to coastal areas, include:

5. Extension of the Red Line via the Boston and Main Railroad right-of-way to Braintree.
6. Construction of the Salem/Peabody Connector, using the B&M right-of-way from Route 128 in Peabody to Salem.
7. Permanent institution of exclusive bus lanes on the Southeast Expressway, beginning April, 1977.

All of these projects, with the exception of the Revere Beach Connector, would involve improving existing access to areas already extensively developed and can therefore be expected to have limited secondary growth impacts. In addition to these projects, a corridor planning study is currently underway to investigate alternative improvements to the Route 3 corridor from Kingston to Bourne outside the coastal zone. Major alternatives under consideration include the restoration of rail service and the construction of additional bus lanes. As with all major projects under consideration, analysis of the potential effects on growth of these alternatives is an integral part of the Bureau of Transportation, Planning and Development's Corridor Planning process. Coordination with local, regional and statewide growth policy and land use plans is required.

#### SEWAGE TREATMENT PLANTS AND COLLECTION FACILITIES

Assuming that a) demand for development is high; b) sufficient quantities of developable land are available; c) access to vacant parcels exists or can be feasibly provided; and d) local or regional water supplies are adequate to support growth, provision of sewage treatment facilities and collection systems is likely to affect the choices of parcels chosen for development because:

1. home owners will generally prefer the convenience of sewers over the responsibilities of maintaining properly functioning sub-surface disposal systems.
2. stringent environmental regulations are making permit approval for sub-surface disposal or point source discharge increasingly more demanding and time consuming.



3. the costs to developers of residential or commercial developments of installing package treatment plants are not competitive with the costs of installing sewer connectors.

In areas where development is restricted because soils are unsuited for on-site sub-surface disposal of sewage and/or ground water supplies are threatened with contamination, the availability of sewers will unquestionably influence the pattern and rate of development (see earlier discussion on the State Environmental Code).

Factors related to the design of a sewage treatment facility and its interceptor system that will affect development patterns include primarily the designed capacity of the plant and secondly the routing and length of the interceptor sewer lines which transmit sewage to the plant.<sup>8</sup>

These factors serve to define the service area of the treatment facility and the density of development within the service area that the plant can accommodate. Typically, plants are constructed in stages so that the cost of providing excess capacity can be deferred until the added capacity is needed. However, estimating needed plant capacity at the time of initial plant construction is subject to considerable variability, given the difficulty of projecting accurate increases in population and land use and the lack of uniform standards regarding the amount of excess capacity needed. Should a facility be overdesigned, a community may be compelled to try to accelerate growth within the plant's service area in order to raise property tax revenues to help pay off the community's share of operation and construction costs. Further the construction of interceptors or force mains across previously undeveloped areas may open up additional parcels of land for development at a density greater than that called for by local zoning or by a town's desire to maintain community character or preserve open space. Once the main sewer lines are constructed it may be impossible to withstand economic and political pressure for a zoning change in the system's service area to allow a greater density of development.

The map on the following page depicts existing and potential sewer service areas in the coastal zone. Some of the areas delineated as potential sewer service areas have been identified on the basis of information generated by the section 208 areawide programs and the section 303 basin plans developed by the Division of Water Pollution Control and are subject to revision pending completion of the 208 programs. The potential service areas probably represent the maximum extent of land area to be sewered in the next twenty years based on estimates of the potential for occurrence of water quality problems. For any one of these areas, however, non-structural solutions may be deemed more appropriate at some time in the future. A list of section 201 wastewater treatment facility projects currently on the Division of Water Pollution Control's construction grants priority list is included at the end of this section.

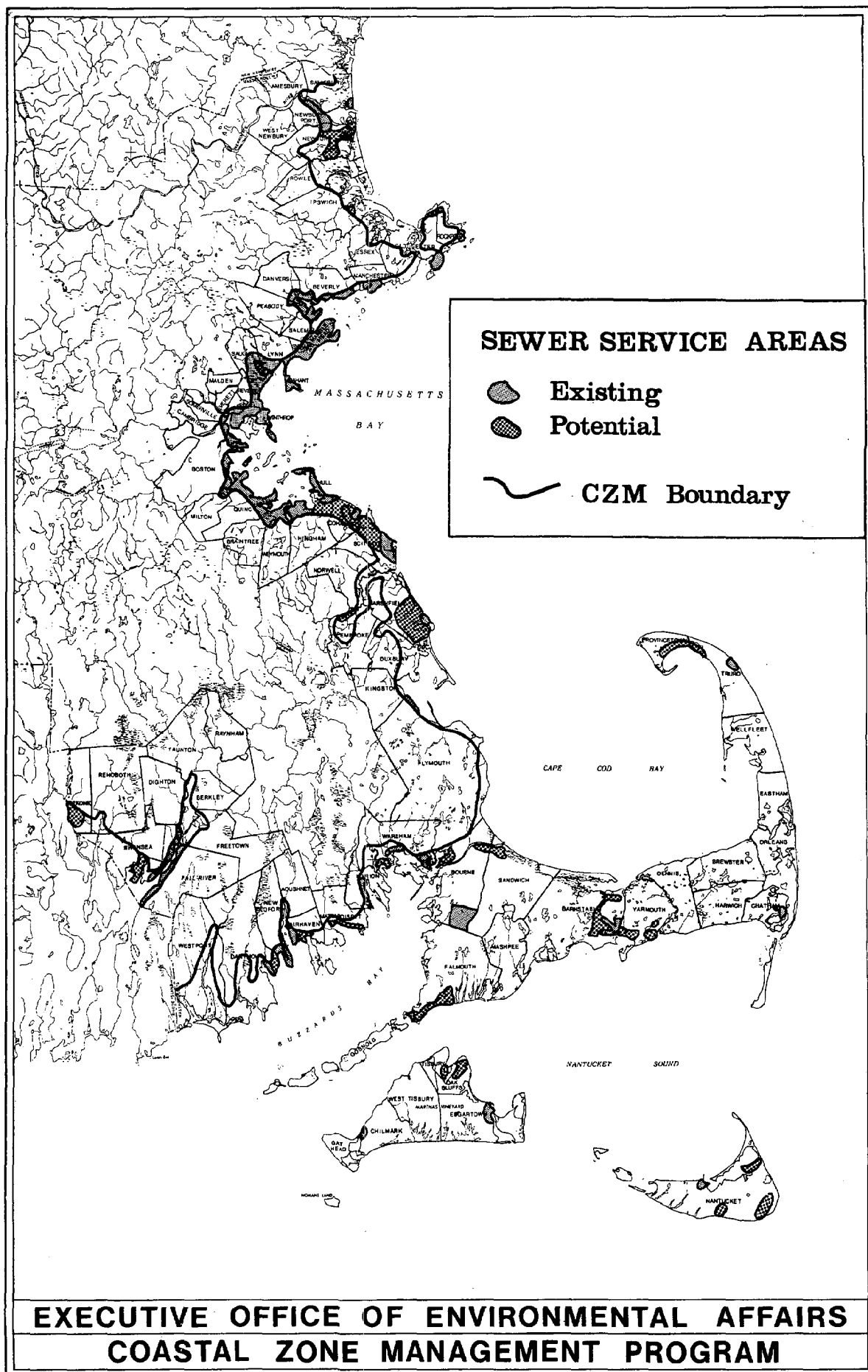


Figure 2 289

In Massachusetts, collection systems can qualify for federal or state funding only if two thirds of the system's flow design capacity is to accommodate wastewaters from development in existence prior to October, 1972. Systems designed to serve new sub-divisions or newly developed urban areas are not eligible under the Construction Grants Program.<sup>10</sup> EPA guidelines mandate that highest priority be assigned by the state to projects which "reduce pollution from existing municipal wastewater discharges."<sup>11</sup> Thus projects most likely to receive federal and state funding will be those designed to alleviate water pollution problems in areas already developed. However, since the high level of federal funding available for construction of sewage treatment plant and collection systems is expected to continue for at least the next ten years, it will be important to ensure that construction of these facilities is done in concert with efforts to guide growth in such a way that adverse secondary impacts of unplanned sprawl growth can be avoided. By upgrading existing systems in previously developed areas, designing the service areas of collection systems to circumvent critical environmental areas and promote infilling of vacant developable parcels, and by limiting system capacity to accurately projected future needs, the consolidation of growth in existing development centers will be facilitated. Construction of the systems can thus serve as a catalyst for revitalizing urban or community centers, enhancing community character, and minimizing the disturbance of natural areas in outlying regions.

#### DEVELOPMENT OF PUBLIC RECREATION FACILITIES

Development of major recreation facilities on publicly acquired lands, if improperly designed and managed, can pose severe traffic, maintenance, and environmental impacts on local communities who must bear the burden of increased congestion and strip development along the access roads to the facilities. Concurrent with the development of ancillary tourist services, second home developments and housing for employees working in the local service industries will sprawl out from the routes linking the facility nodes. Seasonal influxes of tourists and recreationists may greatly overtax local water supplies and the capability of resources to sustain the impact of unchecked, sprawl growth.

On the other hand, public investment in recreation facilities can provide a substantial stimulus to local tourist economies, creating jobs in support services and bringing in needed revenue from other areas. The keys to ensuring that such benefits will accrue without sacrificing environmental quality are sensitive project design and effective management once lands have been acquired and facilities constructed.<sup>12</sup>

#### PUBLIC SUBSIDIES TO HOUSING, COMMERCIAL DEVELOPMENT AND URBAN IMPROVEMENTS

Improving the quality of the urban environment has obvious implications for influencing the location of future development, as evidenced by recent rehabilitation projects along Boston's waterfront

and in other urban centers within the Massachusetts coastal zone. Major public investment opportunities center on the use of federal funds for subsidized housing and community improvement programs administered by the Department of Housing and Urban Development and public works programs administered by the federal Economic Development Administration. Increasingly, the trend in these programs is away from the urban renewal emphasis of past programs and toward the rehabilitation of existing urban structures and facilities, such as the adaptive reuse of old industrial buildings for commercial or retail enterprises (see Ports and Harbors Section). Joint developments, in which public and private sector interests combine to develop mixed use complexes; e.g., a municipal park adjacent to retail shops or entertainment facilities, are also becoming more common. To the extent that types of programs and projects can offset trends toward suburban sprawl and development of regional shopping and commercial centers, growth in existing development centers can be stimulated.

#### SUMMARY OF EXISTING DEVELOPMENT CONSTRAINTS

Taken together the State Environmental Code and the acts protecting inland wetlands operate to define appropriate uses for upland areas of the coastal zone based on resource capabilities. The approximate areas where the density of development will most likely be constrained in order to comply with these laws are shown on The Summary Map. Also shown on this map are Geographical Areas of Particular Concern\* in which development will be conditioned or limited to certain permissible uses in accordance with CZM policies presented earlier in other sections of the plan. These include, primarily: intertidal areas valued for their ecological significance, floodplains and eroding areas, and designated ports. Additionally, already developed lands and lands in public ownership (major public parks, forests watersheds and selected military lands) are indicated.

The remainder of lands in the coastal zone, which as shown in the table below represents approximately 21% of the total acreage of the coastal zone (including the surface acreage of delineated coastal embayments, estuaries, and salt marshes), should support development using sub-surface discharge of wastes to moderate levels of density, as determined by compliance to the State Environmental Code. While the resource capabilities of these potentially developable areas will probably support such development, the pattern and rate of growth that will occur will be largely determined by local zoning and open space plans and by community response to the developing 208 programs<sup>13</sup>. Communities have expressed a strong desire to retain principal

Note: \*Includes the following SRA's: barrier beaches, primary dunes, sandy beaches, salt-marshes, shellfish beds, salt ponds, estuaries, coastal embayments, anadromous fish runs, flood plains, eroding areas, and designated port areas.

responsibility for growth management in these areas. Direct and significant impacts on coastal resources caused by development actions there are likely to be limited. Thus, the CZM program does not advocate extensive regulation and management of activities occurring in these upland areas. Instead, the program focuses on the protection of the most sensitive resource areas in the coastal zone (primarily intertidal areas along the shoreline).

Table 1

Distribution of Land Use and Resource Capability Categories

	<u>Acres</u>	<u>Percentage of Total Acreage</u>
Developed Areas(1975)	122,800	22%
Development Constraints in Upland Areas		
Inland Wetlands	50,000	9%
Sub-surface disposal limitations	95,000	17%
Geographical Areas of Particular Concern*	70,000	12%
Publicly Owned Areas	45,000	8%
Martha's Vineyard**	60,000	11%
Potentially Developable Areas	118,000	21%
TOTAL	560,800	100%

The map thus provides a general overview of possible development patterns in the coastal zone, assuming that sewers are not extended significantly beyond lands contiguous to existing development centers, since extension of sewers into lands in either the "development constraints" or "developable areas" categories would allow a higher density of development than that permissible under the State Environmental Code. State involvement in the management of development in the interior areas of the coastal zone will be limited to overseeing administration of the Environmental Code and the acts protecting inland wetlands, review of projects that could adversely impact historic sites of districts (see Policy 14), and review of energy facility siting proposals (See Policies 28-33), unless state or federal permits relating to point sources of air or water pollution are involved or public investment is required to provide supporting infrastructure. Thus local governments will continue to have principal responsibility for land use decision-making related to issues of local concern.

Note: \*Includes the following SRA's: barrier beaches, primary dunes, sandy beaches, salt-marshes, shellfish beds, salt ponds, estuaries, coastal embayments, anadromous fish runs, flood plains, eroding areas, and designated port areas.

\*\*Land regulated by the Martha's Vineyard Commission (GAPC's and areas with sub-surface disposal limitations on Martha's Vineyard are included in the "Development Constraints" and "Significant Resource Area" categories)

## OBJECTIVES

1. to support conformance to existing environmental protection regulations while respecting local jurisdiction over land use issues of local concern,
2. to provide incentives for new development in the coastal zone to locate in existing urban and community centers,
3. to maximize the use of prior infrastructure investments in development centers in the coastal zone,
4. to improve communication between the public and private sectors with regard to the suitability of land areas in the coastal zone for development,
5. to provide assistance to localities requesting aid in improving growth management at the local level.

## CZM POLICIES AND PROGRAM RECOMMENDATIONS

Policy (34) All development must conform to existing state and federal requirements governing sub-surface waste discharges, point sources of air and water pollution and protection of inland wetlands.

Regardless of location in the coastal zone, all development actions must conform to existing state and federal permit requirements for the discharge of substances into the air or waters of the Commonwealth and for the protection of inland wetlands. Commercial, industrial and residential development to which other CZM policies do not apply are considered to be of local concern, provided they are in conformance with the State Environmental Code, laws protecting inland wetlands, and applicable discharge permit requirements.

## IMPLEMENTATION

This policy is to be implemented by existing EOEa agencies in accordance with existing procedures and regulations. Where necessary, CZM will provide supporting funding for additional staff resources to assure that the laws are adequately administered and enforced.

--The State Environmental Code Title V (MGLA Ch. 111, S. 17) - provides minimum standards relating to the construction and operation of sub-surface sewage disposal systems by any individual, corporation city, town, county, or the Commonwealth. Sub-surface discharges of less than 15,000 gallons per day are subject to permit approval by local Boards of Health. As set forth in Title I of the Code, both the Boards of Health and DEQE are authorized to conduct inspections and to enforce compliance with the code. Systems discharging greater than 15,000 gpd are subject to approval by DEQE prior to issuance of permits by the local Boards of Health. For these latter systems, DEQE may require additional treatment prior to sub-surface disposal.

--Protection of Inland Wetlands (MGLA Ch. 131, S. 40, MGLA Ch. 131 S. 40A) - inland wetlands are protected similarly to coastal wetlands by means of local conservation commission review under Ch. 131, S. 40 and through restrictive orders issued by the Commissioner of DEM under Ch. 131, S. 40A.

--Air Quality Permits (MGLA Ch. 111, SS. 142A-142E) - new and modified sources of air pollution must conform to emission limitations contained in Massachusetts regulations, federal new Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP), and must be in compliance with Massachusetts and National Ambient Air Quality Standards (NAAQS). Principal activities subject to permits issued by the Air Quality Program, DEQE, include incinerators, industrial facilities such as foundries, manufacturing plants, and refineries, fossil fuel utilization facilities with energy input capacity greater than 3 million BTU's per hour, and storage and loading facilities for petroleum products.

--Point Source Water Quality Permits (MGLA Ch. 21, S. 43, P.L. 92-500) - point source discharges into the waters of the Commonwealth must conform to the more stringent of national effluent limitations, state receiving water standards, or other applicable regulations. Standards for Massachusetts waters are established by regulation pursuant to MGL Ch. 21, S. 27. Permits are issued jointly by the Division of Water Pollution Control and EPA under the National Pollution Discharge Elimination System (NPDES). Municipal and industrial discharges require permit approval and the establishment of compliance schedules where applicable. Under Massachusetts regulations, certain waterbody segments are classified "anti-degradation", which prevents any new discharges into the segment. (See also Policy (3) for specific applications to discharges into marine waters.)

--Sewer Connections and Extensions (MGLA Ch. 21, S. 43) - permits are required for the extension of municipal sewage collection systems or the connection of individual lines to the municipal system. Permits are issued by the DWPC, subject to the capability of downstream treatment facilities and collection lines to handle increased loads.

Policy (35) Upgrade public infrastructure in existing developed areas, assigning highest priority to infrastructure which meets the needs of urban and community development centers.

CZM will actively support public infrastructure investment for waste treatment facilities, sewer systems and transportation improvements in existing developed areas, where:

1. strong community support for concentrating growth is expressed and where there is evidence that local regulatory measures will be adopted to direct future development consistent with the proposed infrastructure investments,
2. surface and ground water supplies are adequate to support further growth, and,
3. concentrating development will be compatible with community and regional character.

Outside of existing development centers, CZM will support public investments to meet the infrastructure needs of planned industrial parks or other types of planned, clustered developments provided that the above criteria are met, and:

1. long term development plans for the project are identified, and the capacity and service area of infrastructure serving the project are designed and staged such that growth beyond that planned will not be induced.
2. zoning of the area where the development is to be sited will provide for clustering of any future ancillary development or would establish an open space buffer zone around the project.

#### Implementation

##### Sewage Treatment Facilities and Collection Systems

CZM will coordinate with federal, state, regional and local entities responsible for waste treatment facilities planning, construction and permitting to ensure that the location and design of treatment plants and sewage collection facilities encourage the consolidation of growth in existing developed areas. The Summary Map (discussed previously in the text of this section and located in the back cover of Volume I) and the Sewer Service Areas map on page 289 will be used as a policy guide in determining future state and federal investments in waste treatment facilities in the coastal zone. CZM priorities are summarized below.

- Accord highest priority to 201 projects in existing urban areas or community centers where water quality problems merit rehabilitation or new construction of treatment and collection facilities. These areas are included in the "Developed Land" category shown on the Summary Map and are generally developed at a density of 1 unit/acre or greater.
- Accord next highest priority to projects proposed for contiguous developed areas, which are as yet unsewered, but whose water quality problems merit implementation of structural solutions. These areas may include lands in either the "Potentially Developable" or "Development Constraints" categories.
- Accords lowest priority to projects proposed for undeveloped areas. These areas include lands in all categories but the "Developed land" classification. Public investment in waste water facilities will be allowed only when there is a documented public health problem requiring resolution through structural measures. System design will be carefully evaluated as indicated below particularly in lands falling within the "Geographical Areas of Particular Concern" category which have least priority for 201 investment. Unsewered private development within any of these areas must meet all environmental regulations of the Commonwealth (Policy 34) and be consistent with other applicable CZM policies. It is anticipated that unsewered areas within the "Development Constraints" or "Potentially Developable" categories will not be developed at a density greater than four units/acre.



These priorities basically parallel the priorities currently used to formulate the state's section 106 Priority List. For purposes of consistency with the coastal zone program, the projects listed on the state's current 201 priority list (see page 305) that have advanced beyond the Facility Planning Phase (step 1) are deemed to be consistent with the program. Projects for which Step 1 plans and Step II (Design) applications have not been completed will be reviewed for conformance to all applicable CZM policies when their Step 1 plans are submitted for approval. Such review will focus on the following:

1. The location of the outfall and method of treatment relative to marine resources and recreation resources (see also Policies (1), (2), (3)).
2. The location and design of proposed facilities relative to flood and erosion hazards (see also Policy (9)).
3. The location, design, and capacity of proposed facilities relative to secondary impacts and growth inducement including assessment of:
  - \* market demand and number of lots opened up for development that were previously constrained by soil limitations;
  - \* compatibility with local zoning and density patterns;
  - \* impacts on scenic resources and historic districts or sites (see also Policies (13) and (14)).
  - \* impacts on public recreation beaches (see also Policy 27)

CZM will coordinate its review activities as indicated below:

--Section 208 Areawide Waste Management Programs (P.L. 92-500) - the regional 208 agencies will be delineating future service areas requiring structural solutions in their final plans, and will be preparing construction grant priority lists to be updated in five year intervals. CZM will monitor the outputs of these agencies (whose concerns for protecting critical areas, etc., generally parallel those of CZM) to ensure that CZM's concerns for guiding growth through infrastructure investment are adequately considered. All future 201 grants must be consistent with the approved 208 plans, as required by P.L. 92-500. Both 201 projects and 208 plans must be consistent with the approved CZM program (Sect. 307, CZMA).

--State "106" Priority List - The state funds 15% of the construction costs of new facilities under the federal 201 grant program and can thereby exercise control over facility design. The Secretary of Environmental Affairs is empowered with final approval authority over grant awards, thereby ensuring adequate opportunity for CZM input and review. As noted earlier in the text, sewage collection systems designed to serve newly developed areas or designed with excess capacity greater than one third of the population in existence in 1972 are ineligible for funding.

--State and Federal Permits for Treatment Works, MGLA Ch. 21, S. 43, Water Pollution Control Act Amendments, P.L. 92-500, Sections 401, 402 - Through issuance of a National Pollution Discharge

Elimination System permit and a state Water Quality Certificate, EPA and DWPC require that discharges from point sources conform to effluent limitations, receiving water quality standards, and comprehensive plans adopted by the Division, thus ensuring that construction or improvement of treatment facilities will not degrade water quality. The areawide Section 208 plans are considered comprehensive plans by the Division.

--MEPA - Permit determinations or construction grants by DWPC relating to treatment works are currently exempt from MEPA. However, since the filing of an environmental assessment form is triggered by many other permit determinations likely to be involved in the construction of treatment works, interceptor or collection systems (e.g., curb cut permits, wetlands permits, or tidelands permits), it is probable that CZM will have the opportunity for considerable input into evaluation of facility design. Environmental assessment forms are filed by 201 applicants at the completion of Step 1, Facility Planning Phase, thus, ensuring that CZM will have the opportunity to review proposed projects before they have advanced to the detailed design phase.

--A-95 Review - Since treatment facilities and interceptor systems are 70% funded by federal funds, CZM will have the opportunity to review and comment through the A-95 review process, at the conclusion of both Step 1 (Facility Plan) and Step 2 (Design) phases of the 201 construction grants process. The federal consistency provisions of CZMA requires federally supported programs to be consistent with the approved CZM plan.

--NEPA - If projects are deemed by EPA to be highly controversial or capable of causing significant adverse environmental impacts, a federal environmental impact statement may be required at the end of Step 1. Should an EIS be so required, CZM would participate in the review.

--Economic Development Administration - Provides grants to public entities and loans to public and private entities for the construction or expansion of public works projects which offer substantial employment potential, improve the capacity for economic growth through the development of facilities conducive to the location of industrial and commercial enterprises, or provide essential services to the citizens of economically depressed areas. This program finances such projects as industrial parks, access roads, water and sewer systems, and the expansion of harbor and airport facilities. CZM will act as an advocate before the Economic Development Administration to support funding for proposed sewer systems consistent with the above policy.

#### Transportation Projects

For the most part, the state's transportation network in the coastal zone is virtually complete. Therefore, CZM's involvement in transportation planning, except as enumerated in the Recreation section of this chapter is expected to be limited, relative to anticipated involvement in sewage treatment facility planning. However, CZM will coordinate with the federal, state, and regional agencies involved in transportation planning to ensure that investments in transportation improvements serve to guide growth in a manner consistent with CZM objectives.

In particular, CZM will actively participate with the Bureau of Transportation Planning and Development of the Department of Public Works and with Regional Planning Agencies in the corridor planning process in which alternative transportation improvements for a particular corridor are evaluated for "consistency with the objectives and findings of other functional planning efforts for the region."<sup>14</sup> Evaluation of effects on land use and growth which may result from candidate improvements is an integral part of this process and must be reflected in the selection of recommended improvements. Additionally, CZM will urge that priority be given to implementation of transportation improvements in existing development centers and that new roads serving outlying areas valued for their scenic or ecological attributes be designated limited access highways.

As noted in the text, four major projects that are proposed for construction are within the boundary of the coastal zone. The Blue Line Extension to Lynn, the Revere Beach Connector, and the raising of the New Bedford/Fairhaven Bridge will all serve existing development and are thus in concept consistent with the CZM Plan. The Blue Line Extension and the Revere Beach Connector should facilitate public access to the shore as well, and the New Bedford/Fairhaven Bridge will enhance commercial shipping opportunities. All of these projects are in the pre-engineering stage/environmental studies phase of transportation planning. CZM will review design aspects of the projects for consistency to other policies of the CZM Plan (e.g., Policy (4)) at such time that alternative design concepts have been sufficiently advanced.

Segments of the Route 25 extension around Buttermilk Bay will be within the boundary of the coastal zone. However, this project has advanced beyond the environmental studies and design development stages and is scheduled for construction in the immediate future. Therefore, it would be inappropriate for CZM to comment on its consistency with the program.

CZM will network with the various agencies involved in transportation planning as described below:

--Regional Planning Agencies and Transit Authorities - As the principal authors of the state's Annual Unified Work Programs, the RPA's are directed by the BTP&D in the Corridor Planning Process to integrate transportation planning with other elements of their planning programs. CZM will make an explicit effort to ensure that its concerns for providing incentives for focusing growth to existing development centers are considered in the formulation of the Work Programs.

--Executive Office of Transportation and Construction, and the Bureau of Transportation, Planning and Development - The 3C Transportation Planning Program, established by the Federal Highway Act of 1962 and the Urban Mass Transportation Act of 1974 is administered by the BTP&D. All major projects are evaluated through Corridor Planning Studies as noted above. EOEA and EOTC will formalize the measures EOTC will take to meet their MEPA responsibilities to minimize damage to the environment regarding transportation improvements in the coastal zone. CZM will also have the opportunity for review and comment through the A-95 and NEPA process. Certification of federal consistency will be required.

Policy (36) Encourage the revitalization of existing development centers in the coastal zone by providing federal and state financial support for residential, commercial, and industrial redevelopment.

Most federal and state programs which provide subsidies for housing development or financial support for commercial and industrial investments are already directed at providing assistance to urban areas and as such serve to stimulate development there. Criteria for the allocation of funds authorized by these programs are well established. As suggested in Policy (20) of the Ports and Harbors section, however, CZM can act as an advocate for Massachusetts coastal towns in the solicitation of federal and state funds, where the funds are to be used consistently with CZM program recommendations. CZM will be particularly active in this advocacy role in those situations where the proposed uses of funds will:

1. enhance community and regional character by providing for the rehabilitation or adaptive reuse of older structures within existing urban and community development centers.
2. maximize use of existing or upgraded infrastructure investments consistent with the previous policy.
3. not pre-empt the use of waterfront land for marine dependent activities (see Policy (17), Ports and Harbors section).

#### IMPLEMENTATION

--Department of Community Affairs (DCA) - Supervises public housing authorities, urban renewal authorities, and urban redevelopment corporations, is instrumental in financing housing projects, local community development corporations and small enterprises, and exercises project and organizational approval powers over related programs. CZM will act as an advocate before DCA to ensure that proposed projects consistent with this policy are given priority.

--Department of Housing and Urban Development - Provides, under the Housing and Community Development Act of 1974, direct grants to state, metropolitan, and regional planning agencies for land use, housing, urban, and redevelopment planning. In addition, formula and discretionary grants under the Community Development Block Grant Program, intended to help eliminate problems of low-income persons, may be used for improving living conditions, conservation of expansion of housing and housing opportunities; for increased public services; for improved use of land, including recreational facilities; increased neighborhood diversity; and for preservation of property with special values. Under the A-95 review process, CZM will champion applications consistent with the above policy.

Policy (37) Encourage the adoption of local zoning and regulatory controls which promote clustering of new development and encourage compatibility between future growth and public infrastructure investments.

A number of local zoning and regulatory tools which are applicable to achieving the objectives of this section were enumerated in conjunction with Policy (4) in the Visual Environment section of this

chapter. These included; PUD or cluster zoning, providing for transfer of development rights or density bonuses, conservancy zoning, and the purchase of conservation easements.

Other techniques, such as phased growth or timed release zoning can be used to coordinate the locations of future development with infrastructure investments, thereby preventing "leap frogging" of development into outlying areas. Moratoria on further development can also be legally instituted, if special cause can be shown - such as a severe shortage of water from local groundwater sources. Subdivision regulations which prescribe the layouts of streets and storm water drainage systems may offer some utility in influencing the design of proposed developments, but their application in the control of growth in relation to the land's capability for absorbing has been limited in the past.

#### IMPLEMENTATION MEASURES

CZM will collaborate with the Office of Local Assistance of the Department of Community Affairs in providing technical or financial assistance to localities interested in enacting zoning by-laws consistent with the objectives of the CZM Plan. CZM will also encourage Regional Planning Agencies to propose adoption of applicable zoning measures at annual town meetings as provided under the authorities of the Zoning Enabling Act of 1975.

--Zoning Enabling Act (Acts of 1975 , Chapter 808) - Authorizes local communities to adopt zoning measures to regulate the use of land within their political boundaries, including the institution of development moratoria. Special permit requirements can be added to local zoning by-laws to allow cluster zoning.

--Subdivision Control (MGL Chapter 4) - Used in conjunction with local zoning and health codes to regulate the division of land into buildable lots. Subdivision regulations can include standards for review of soil adequacy for natural drainage, proximity to critical environmental areas, and adequacy and impact of proposed street layouts and sewage plans.

Policy (38) Encourage major developments conforming to CZM policies and assist developers to reach such conformance.

Growing public awareness of land use issues and environmental concerns has resulted in increased sophistication both on the part of the private sector and government in dealing with large-scale development. To review such developments, communities, rather than simply checking whether the proposed site is zoned for the kind of development contemplated, are relying more and more on such complex regulatory techniques as site plan and design reviews and special permit and impact review processes. These newer zoning techniques allow a broader range of impacts and benefits to be assessed before a decision on approval or denial of a local permit is reached. At the state and federal government levels, major private or quasi-public developments are increasingly subjected to a wider variety of controls -- for example, air and water quality permits, curb-cuts to state highways, and environmental impact assessment requirements. These changes in regulatory control at the local, state and federal levels also typically give greater opportunity to the public to participate in decision-

making.

Simultaneously, government is attempting to attract desired kinds of development. In Massachusetts, public urban redevelopment corporations are authorized to purchase blighted land and undertake site preparations for private development; in certain instances, property tax reduction is negotiated with developers as part of urban renewal efforts, and communities and the state promise to provide access roads, sewer and water hook-ups, and other utilities and amenities in order to ensure the viability of a development.

The expanded role of government and the public both in the review of development actions and in the inducement of individual private developments has caused the private sector, as a matter of sound business practice, to consult extensively with government and the public at large prior to undertaking any large-scale developments. Given these kinds of interactions between the private sector, the public, and government, CZM will work with private and quasi-public developers -- be they proposing a new resort village, a convention center, a new airport or airport expansion, a new industrial park, a shopping center, etc. -- to ascertain how CZM policies would apply to the project, to examine feasible alternatives that may bring the project into greater conformance with CZM policies, and to investigate what measures state government might take to assist the development, if it is sound and complies with CZM policies.

#### IMPLEMENTATION MEASURES

--CZM Maps - Both the regional CZM maps and the Summary Map showing general development constraints, potentially developable areas, and already developed areas, should provide considerable guidance to developers as to the suitability of sites in the coastal zone for development. All of these maps will be available on request.

--Massachusetts Environmental Policy Act (MEPA) (MGLA Ch. 30, SS. 61-62) - Requires agencies of the Commonwealth to review, evaluate and determine the impact on the natural environment of all works, projects, or activities (including permit decisions) conducted by them. Agencies are directed by the Act to "use all practicable means and measures to minimize damage to the environment."

For activities that may cause damage to the environment, the preparation of an environmental impact report is required, and agencies may not proceed with the proposed activity until sixty days after the publication of the final environmental impact report or until sixty days after a public hearing has been held on the report. Reports covering proposed permit actions are limited in scope to the subject matter jurisdiction of the agency in which the permitting authority is vested. Reports are explicitly required to describe alternatives to the proposed action and their environmental consequences.

In administering MEPA, EOE and other state agencies have determined by regulation that certain categories of activities may not cause damage to the environment, and these are exempted from the impact report preparation requirements of MEPA. These exempted actions, for example, include issuance of sub-surface sewage disposal permits for systems discharging less than 150,000 gallons per

day, single family dwellings, and curb-cuts to state highways for residential development of less than 50 units.

For actions subject to MEPA, CZM will use the reporting requirements and participate in the review of impact reports to review conformance with CZM policies, to surface feasible alternatives for the proposed action that may bring the proposed activity into greater conformance with CZM policies, to ensure that the public and government agencies have sufficient information to make an informed decision, and to explore what measures state government might take to assist the development's viability.

--Other - The viability of many major private developments is often contingent on some state or federal support, be it in the form of the construction of access roads, provision of sewer services, development of recreational facilities, acquisition of open space, site preparation, etc. As developers explore siting and design alternatives informally with CZM and other state agencies and formally through the MEPA process, CZM will, in conjunction with the Secretary of Environmental Affairs and the Development Cabinet and other state and federal agencies, explore those inducement measures that state government might take to ensure that the development proceeds in a location and manner most consistent with state policies, including those of CZM.

### Technical Notes and Sources

1. William P. MacConnell, Remote Sensing 20 Years of Change in Massachusetts, 1951/52 - 1971/72, 1975.
2. Phillip B. Herr Associates, "Alternative Growth Futures", CCPEDC 208 Program, August, 1976.
3. Office of State Planning, Towards a Growth Policy for Massachusetts, A Preliminary Draft, October, 1975.
4. Urban Systems Research and Engineering, Inc., The Growth Shapers, prepared for the Council on Environmental Quality, May, 1976.
5. Title V of the State Environmental Code has recently been revised. The revised edition becomes operative in July of 1977.
6. For further elaboration of the benefits of clustered growth, see: Real Estate Research Corporation, The Costs of Sprawl, prepared for DEQ, HUD, and EPA, Washington, D.C., 1974 and Urban Systems Research and Engineering, Inc., The Growth Shapers, CEQ, May 1976.
7. Only major investments involving use of federal and state funds are addressed. In Massachusetts, municipal water supplies are primarily provided by local institutions with the exception of the Metropolitan District Commission. The Executive Office of Environmental Affairs is currently developing a statewide policy on water use which together with plans of the Division of Water Resources, the developing 208 areawide waste treatment management plans and municipal water supply plans will form the basis of future water supply management. For a detailed discussion of water supply problems and alternative solutions, see Wallace, Floyd, Ellensweig, and Moore, Inc., Massachusetts Water Supply Policy Study, prepared for the Massachusetts Executive Office of Environmental Affairs, January 1977 and NERBC, The Southeastern New England Study, December, 1975.
8. Urban Systems Research and Engineering, Inc., op. cit. and Environmental Protection Agency, "Proposed Rules for grants for Construction of Treatment Works", 40 CFR Part 35, Federal Register Vol. 42 No. 24, February 4, 1977.
9. Source of Mapped Data:
  - Cape Cod - Cape Cod Planning and Economic Development Commission, 208 Plan, "Task 2.8, Sewer Service Areas", Draft, April 1977
  - SRPEDD Region - Southeastern Regional Planning and Economic Development District, 208 Plan, "Subtask 2.1 Service Area Delineation", Draft, June 1976.
  - Remainder of Coastal Zone - New England Region Basins Commission, SENE Study, December 1975.



10. Massachusetts Water Resources Commission, Division of Water Pollution Control, "Criteria for Establishing Priorities for Grants Under Federal Water Pollution Control Act and the Massachusetts Clean Waters Act", August 1977.
11. Municipal Construction Division, Water Program Operations, Office of Water and Hazardous Materials, U.S. Environmental Protection Agency, Handbook of Procedures, Construction Grants Program for Municipal Wastewater Treatment Works, Transmittal Memorandum, No. 77-1, December 1976.
12. Note: Policies addressing these concerns are detailed in the Recreation section of this chapter.
13. Identification of the characteristics and magnitude of non-point sources of pollution and development of strategies to improve management of them are the principal activities of the Section 208 Areawide Waste Treatment Management programs currently underway throughout the coastal zones.
14. See Bureau of Transportation Planning and Development, Draft Revision Administrative Guideline Number 4, Corridor Planning Studies, January 20, 1977.

TABLE 2

## 201 CONSTRUCTION GRANTS PRIORITY LIST

FISCAL YEAR 1977

<u>TOWN</u>	<u>PROJECT</u>	<u>STEP</u> (Status as of May, 1977)
Barnstable	Int, FM	3 application submitted
Beverly	Col	1 application submitted
Boston	Charlestown Sep	3 application submitted
Dartmouth	Col	2 in progress
Duxbury	Col	2 in progress
Edgartown	Col	1 in progress
Essex	Col, WWTP	1 application submitted
Fairhaven	Col, PS, Int	2 in progress
Fall River	WWTP, Col, Sep	2 in progress
Falmouth	WWTP, Col	1 in progress
Gloucester		1 in progress
Gosnold	Septic System	1 in progress
Hull	Col	2 in progress
Ipswich	Upgrade WWTP	1 in progress
Lynn	WWTP	2 application submitted
Manchester	Col	2 in progress
Marshfield	WWTP, Int, Col, Outfall	2 in progress
Mattapoisett	Col, PS, FM	3 application submitted
MDC	Fore R. Siphon	2 in progress
	Deer Island	1 in progress
Nahant	Int, PS, FM	2 application submitted
Nantucket	WWTP	2 application submitted
New Bedford	WWTP, Sep	1 application submitted
Newburyport	WWTP	3 approved
Quincy	PS	2 application submitted
Revere	I/I	1 to be submitted
Rockport	PS, Col, FM	3 application submitted
Salisbury	STP, Col	1 under consideration by town
Sandwich	WWTP	1 in progress
Scituate	Col, PS, Int	2 application submitted
	Addition to WWTP	
Somerset	Upgrade WWTP	1 to be submitted
SESD Salem	WWTP Pilot Study	1 in progress
SESD Salem	Int	3 application submitted
Tisbury	WWTP, PS, Col	2 application submitted
Wareham	Col	2 in progress
Weymouth	Col	2 in progress
Yarmouth	Septage	3 application submitted
	WWTP, Col	2 application submitted

Project Abbreviations

WWTP: wastewater treatment plant    Sep: separation project  
 PS: Pumping station                    Col: collector sewers  
 Int: Interceptor                        FM: force main

Step Definitions: 1. Facility Plan; 2. Design; 3. Construction

Note: All projects in coastal communities are listed. Individual Projects may be outside the boundary of the coastal zone.



# 4

## MANAGEMENT

## INTRODUCTION

Management is the mirror to policy. Just as policies cannot be implemented without good laws, so can laws do little without policies to direct their enforcement. The preceding chapter set forth the CZM policies and the technical and substantive reasons for them. It also forged the link with the management structure by identifying the key implementation tools that would be used to effectuate the CZM policies.

This chapter will not repeat that direct policy-to-law linkage. What it will do is address the broad authorities that apply to all of the regulatory programs and describe the administrative structures that will be used to institutionalize the CZM program. It will cover in detail, the means, both regulatory and incentive, at the federal, state, and local levels, that will be used to implement the CZM Plan. The chapter is complex, because it is designed to answer the hard questions that have been posed by lawyers, agency personnel, developers, and concerned citizens. For a short overview, the general reader is encouraged to read the summary of the management system contained in Chapter Two.

The chapter is divided into five parts. Part I explains the Reorganization legislation which provides the framework for the management system. Part II describes implementation tools--regulations, memoranda of understanding, maps, regional chapters and guidelines. Part II also describes the authorities of EOEa agencies; the Secretary's power to designate areas of critical environmental concern, to resolve interagency conflicts and to evaluate agencies' performances; and the role of the CZM office.<sup>1</sup> Part III discusses coordination with federal agencies. Part IV describes technical assistance and program incentives available to communities enabling them to implement the CZM plan. The continuing role of the public and local governments in the CZM program, along with discussion of the future of the program, is covered in Part V.

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<sup>1</sup> For more detailed treatment of the authorities of the Secretary and these agencies, please refer to the work prepared by Dean David Rice of Boston University Law School, Legal and Institutional Resources for Implementation of the Massachusetts Coastal Zone Management Program, which is available upon request as Appendix E.

## PART I: LEGAL FRAMEWORK FOR THE MANAGEMENT SYSTEM

### THE CREATION OF THE EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS AND MGLA CHAPTER 21A, SECTIONS 2, 3 AND 4

The Executive Office of Environmental Affairs (EOEA) was established by the 1969 reorganization of Massachusetts state government. Reorganization combined 43 different agencies and programs into one Secretariat. Previously, there was no state policy to have these programs administered in any consistent way. Reorganization brought these programs together, assigned them among five major departments distinguished by broad areas of responsibility. (DEQE, to administer the state's environmental regulatory programs; DEM, to manage state lands and physical resources; Food and Agriculture, to promote and regulate farm production; MDC to manage recreation and utilities within the greater Boston area; and Fisheries, Wildlife and Recreational Vehicles, to manage and promote our living resources.) The Legislature also recognized that this marriage of diverse programs would require central direction and thus gave to the Office of the Secretary powers to plan and coordinate the operations of the individual programs, to have central budgetary responsibility, and to resolve conflicts.

The first step in the Reorganization process was Chapter 704 of the Acts of 1969 which created the Executive Offices in the Commonwealth and charged them to make recommendations for restructuring state government. Section 50 of that act states:

Such recommendations shall be made with a view to the elimination of duplication and overlapping in the functions, administrative practices and facilities of said agencies, the combination and coordination of information systems, the creation of administrative structures which will assure coordinated and joint planning, the establishment of clear and readily identifiable lines of authority and allocations of responsibility, the coordination and consolidation of the delivery of state services at state and regional levels, and the enlargement of career opportunities.

In 1974, Chapter 806, now codified as M.G.L. Chapter 21A, created new powers and clarified the roles of the Executive Office of Environmental Affairs and its constituent agencies. Three sections (2, 3, and 4) of that act are key to the CZM program.

#### SECTION TWO

Section Two charges Environmental Affairs with the following power and responsibilities:

"The office and its appropriate departments and divisions shall carry out the state environmental policy and in so doing they shall:

- 1) develop policies, plans and programs for carrying out their assigned duties;

- 2) provide for the management of air, water and land resources to assure the protection and balanced utilization of such resources within the commonwealth, realizing that providing safe water to drink and clean air to breath is a basic mandate;
- 3) provide for the propagation, protection, control and management of fish, other aquatic life, wildlife, and endangered species and promote and further develop hunting, fishing, recreational and competitive marksmanship, and trapping opportunities in the commonwealth;
- 4) aid in the promotion and development of the food and agriculture resources of the commonwealth to preserve agricultural lands, and insure an adequate supply of high quality farm products;
- 5) provide for the regulation and management of marine and coastal fisheries and natural resources including those located in the territorial waters, the economic zone waters and the continental shelf, wetlands, estuaries, shorelines, and interior of the commonwealth;
- 6) promote the perpetuation, extension, and proper management of the public and private forest lands of the commonwealth;
- 7) develop statewide policies regarding the acquisition, protection and use of areas of critical environmental concern to the commonwealth;
- 8) develop and administer programs relating to recreation including the acquisition of land, development of facilities, and the provision of advisory services to municipalities and private organizations;
- 9) promote the best usage of land, water, and air to optimize and preserve environmental quality by encouraging and providing for, in cooperation with other appropriate state agencies, planned industrial, commercial, recreational and community development;
- 10) provide for the preservation and abatement of water, land, air, noise, and other pollution or environmental degradation;
- 11) promote the preservation and enhancement of natural, scenic, historic, and aesthetic qualities in both urban and rural areas;
- 12) provide for the control of insects, plant diseases, and pests, and regulate the use and disposal of pesticides;
- 13) develop programs relating to the reclamation or disposal of solid waste material and the operation of sewer and water systems;
- 14) encourage the restoration and reclamation of degraded or despoiled areas, including harbors and inland and coastal waters;
- 15) manage all lands and properties acquired by or assigned to them to preserve their natural beauty, wilderness, or open character of hydrological, geological, historical, scientific, wildlife management, recreational or other significance value.
- 16) assist other state and regional agencies in developing appropriate programs and policies relating to land use planning and regulation in the commonwealth;
- 17) analyze and make recommendations, in cooperation with other state and regional agencies, concerning the development of energy policies and programs in the commonwealth;

- 18) advise, assist, and cooperate with such other departments, agencies, authorities, officials, and institutions, including state institutions of higher learning, as may be concerned with or involved in matters under their control or supervision;
- 19) encourage recycling, resource recovery and environmentally sound purchasing practices to conserve resources and reduce waste;
- 20) monitor the environment to identify changes and to insure efficient and effective control practices;
- 21) develop environmental data management capabilities to aid environmental planning and decision-making;
- 22) encourage, support, and undertake research facilities to produce information relating to the ecological system, pollution preservation and abatement, resource management, and other areas essential to implementing the environmental policies of the commonwealth;
- 23) advise and assist local governments, private and public institutions, organizations and associations, businesses, industries, and individuals by providing and acting as a clearing house for environmental information, data and other materials;
- 24) promote the development of sound environmental education programs;
- 25) represent and act on behalf of the commonwealth in connection with federal grant programs;
- 26) keep accounts, records, personal data, enter into contracts, adjust claims, accept gifts, grants, bequests and devises, and subject to appropriation acquire real or personal property by eminent domain or otherwise;
- 27) advise and assist state agencies, cities and towns, and other units of local government in the preparation of grant of loan applications with respect to any environmental protection or enhancement programs;
- 28) promulgate rules and regulations necessary to carry out their statutory responsibilities

In order to assist the office in the discharge of its duties, the Secretary may request from any agency or political subdivision of the commonwealth any information relevant to the discharge of such duties. An information copy of each application submitted by any political subdivision to any public or private agency for a grant or loan with respect to any environmental protection or enhancement program, including the acquisition of land and facilities for these purposes shall be filed with the office not later than the twentieth day after submission. As the primary agency of the commonwealth for environmental planning, the office shall utilize the services and plans of regional planning agencies, conservation districts, conservation commissions and historical commissions in fulfilling its environmental planning responsibilities."

It is significant that these broad powers and responsibilities are given to the departments and divisions of Environmental Affairs in addition to the Office of the Secretary itself. Thus, while each

line agency still has its own specific enabling legislation, Chapter 21A superimposes on the specific criteria in those individual acts the requirement that every EOE agency carry out the state environmental policy in the manner directed by Section Two.

The State Environmental Policy is voiced in several places. Article 49/97 of the Constitution declares:

"The people should all have the right to clean air and water, freedom from excessive and unnecessary noise, and the natural scenic, historic and esthetic qualities of their environment; and the protection of the people in their right to the conservation, development and utilization of the agricultural, mineral, forest, water, air and other natural resources is hereby declared to be a public purpose."

Chapter 30 M.G.L. Section 61, the Massachusetts Environmental Protection Act (MEPA) directs:

"All agencies, departments, boards, commissions, and authorities (to) . . . determine the impact on the natural environment of all works, projects or activities conducted by them and shall use all practicable means and measures to minimize damage to the environment . . . (which) shall mean any destruction, damage or impairment and eutrophication of rivers, streams or subsurface water resources; destruction of seashores, dunes, marine resources, and underwater archaeological resources, wetlands, open spaces, natural areas, parks, historic districts or sites. Damage to the environment shall not be construed to include any insignificant damage to or impairment of such resources."

Other sources of the state environmental policy can be found in Executive Orders promulgated by the Governor as statements of environmental policy; in statements of environmental policy promulgated by the Secretary of Environmental Affairs; or statements of policy promulgated by the Secretaries with other Executive Offices which are adopted by the Secretary as statements of environmental policy.

How does Section Two operate with respect to the EOE agencies? How do the 27 directives and the mandate to carry out the state environmental policy affect the existing enabling legislation of each agency?

Section Two does not expand basic agency jurisdiction or authority, but it does serve to define or focus the direction of such authority. It does not require agencies to undertake new programs which are beyond the scope of their authorizing legislation. But it does impose an affirmative duty to implement the state environmental policy when they are acting within their existing jurisdiction, whether reviewing a permit or initiating a project.

The key idea here is the phrase "acting within their existing jurisdiction." The scope of discretion granted to agencies by the legislature varies from statute to statute. Some acts grant a wide range of discretion to an agency. Statutes such as these may contain



such phrases as "Public Welfare", "good order", or "care and control". A second category of statutes are those that set forth certain explicit concerns which the agency is to address, but allow wide discretion for how to act within those named concerns. A third category both sets forth the subject area of review and the standards to be used in the administration of the act. Thus, the administrator is essentially without any discretion; if a case arises in the area addressed by the statute and fits the criteria named therein, then the administrator must act accordingly. Laws of this third type are often referred to as ministerial.

An example of the first category are the Waterways laws. Chapter 91 Section 2 states, "The department shall . . . have charge of the lands, flats, shores and rights in tidewaters belonging to the Commonwealth . . ." and at Section 10, "The department shall have general care and supervision of the harbors and tidewaters of the Commonwealth..." A fully developed body of case law has also addressed the role of the state in the management of waterways. These statutes and the courts' interpretation reveal that since waterways are public lands, the state is to act as a trustee over them and must weigh all proposed uses of the waters as to the public good versus the private good that could be obtained from such uses. Thus, the state has broad discretion when reviewing uses in waterways and a concomitantly broad responsibility to incorporate Chapter 21A.

21A, overlaid upon Chapter 91, thus ensures that if a project were proposed which would entail risks to marine resources (for instance) an administrator could not act in ways which would be inconsistent with the directives to "provide for the propagation, protection, control and management of fish, other aquatic life. . ." or to "provide for the regulation and management of marine and coastal fisheries and natural resources including those located in the (open sea), wetlands, estuaries, shorelines. . .", etc.

The Wetlands Protection Act (Ch. 131, Sec. 40) is an example of the second category of statutes. Here the law calls upon Conservation Commissions and DEQE to protect fisheries, prevent pollution, and prevent storm damage, etc. Thus, an administrator could again turn to the directives of subsections 3 and 5 (quoted just above) in deciding how to protect fisheries. And, once the CZM policies are adopted, those relevant to the protection of fisheries would apply to the administration of the Wetlands Act. Contrary to the first category of broad discretion, the limited list of protected interests named in the Wetlands Act would preclude an administrator from applying those parts of 21A dealing with recreation or visual concerns.

An example of a ministerial statute is Chapter 21 which states, "Each person intending to engage (in the business of digging or drilling wells) shall register annually with (the water resources commission) and upon payment of a fee of ten dollars shall be issued a certificate. . ." There are very few such statutes in EOEA.

In sum, the Legislative mandate to the EOEA agencies requires an integrated approach towards critical areas, towards the balanced

and best usage of all resources, and towards conflicting uses of land - natural and commercial, urban and rural or historical and industrial. Section Two furthers the essential purpose of reorganization by ensuring that no agency willfully can act to undermine the concerns of any other unit within EOEa.

### SECTION THREE

Section Three of Chapter 21A declares in part that "the Secretary shall conduct comprehensive planning with respect to the functions of the office and shall coordinate the activities and programs of the (agencies) within the office. He shall continually review the operation of the office with a view toward improving administrative organization, procedures and practices, (and) promoting economy and efficiency."

The CZM program has been the first major effort by the Executive Office and the line EOEa agencies to conduct a thorough program of comprehensive planning for a vital resource area of the Commonwealth. The planning effort and the management structure described in this Chapter and in the Secretary's Regulations adopting the CZM Program rest their authority in part directly upon this section. The performance evaluation procedures, (explained in Part 3) while within the scope of authority of any administrator, are further reinforced by the Legislative directive of Section Three.

### SECTION FOUR

Section Four is referred to as the conflict resolution section. This phrase, and this section of the statute encompasses several concepts.<sup>2</sup> The section reads:

"In order to enable him to coordinate and improve the operations of all departments, divisions and other administrative units within the office, the secretary shall have the following powers and duties concerning

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<sup>2</sup>These concepts parallel those expressed in Section 306 (c)(1) of the CZMA. With regard to these requirements, the CZM plan itself resolves many conflicts among competing uses. The CZM policies, taken as a whole, represent a conscious balancing of the needs to preserve some areas, to develop others or to further recreational uses. The implementation of these policies by the EOEa agencies will mean that for the many activities in areas that the plan addresses directly, the conflicts have already been resolved. Secondly, through the continuing planning role of the Secretary, by technical assistance and special planning grants, and by directing the use of public infrastructure spending, the CZM Program will obviate many conflicts by resolving them in advance. Thirdly, should individual conflicts develop or should there be a conflict within the CZM plan as it is applied to a particular situation, the conflict resolution powers of the Secretary will be applied to ultimately resolve any such issues.

any power or duty assigned to any such department, division or other administrative unit:

(1) the power and duty to resolve administrative and jurisdictional conflicts between any such agencies or officers;

(2) the power and duty to implement, upon request of any such agency or officer, programs jointly agreed to by the secretary and such an agency or officer;

(3) the power and duty to coordinate and improve program activities involving two or more agencies or officers."

The first five lines of Section Four reiterate the philosophy of the Reorganization legislation. This section is key to insuring that the dual legislative purposes of carrying out the state environmental policy and of integrating program activities is performed. First, the Secretary's powers extend to "any power or duty" assigned to any EOEa agency. In subsection (1), the Secretary may resolve "administrative and jurisdictional conflicts." This concept is far broader than simple subject matter jurisdiction, such as whether or not hooking up to a sewer falls within the jurisdiction of Water Pollution Control or the MDC. The power includes situations where two laws or programs have inconsistent criteria or require inconsistent outcomes; where the actions of one agency have the potential for undercutting, interfering with, or duplicating another program; or where there are issues concerning how to fund or enforce certain programs. As an example, the Division of Marine Fisheries may have spent significant funds and efforts in an area to improve fisheries resources. Some other agency of EOEa may wish to dredge, may have a request to permit a water discharge, may want to allow off-shore mining, or may want to encourage a marina development with public access in the same area. Any of these proposals could significantly undercut or nullify the efforts of Marine Fisheries, yet to disallow them could deny other valid public benefits. Difficult choices must be made. The legislature foresaw that it was preferable to consciously make such choices, and to have them made by the administrator who also plans the future course of the agencies (in order to obviate the chances of such situations in the future) than to have both activities proceed in an uncoordinated, expensive and possibly futile fashion.

This reasoning does not deny that there have not been valiant efforts on the part of individual administrators to coordinate their programs or that there are not some laws which expressly require consultation with other agencies. But, Reorganization was essentially a corporate merger, and as any business executive would agree, without clear and firm leadership empowered to resolve conflicts, effective management and unified direction cannot occur.

Chapter 21A(4)(2) gives the Secretary the power and duty to jointly implement programs with EOEa agencies, upon their request. The Memoranda of Understanding with the Commissioners (explained in Part II) trigger this section by requesting that the Secretary join them in implementing the final CZM plan. These requests further underscore the commitment of the EOEa administrators to carry out the CZM policies.

## PART II: MECHANICS OF IMPLEMENTATION

The Coastal Zone Management structure is essentially one where the line EOEAs will be primarily responsible for the implementation of the CZM policies. This will be accomplished via a Memoranda of Understanding with the Secretary and appropriate agencies agreeing to jointly implement the CZM program with the Executive Office and other EOEAs, via the regulations promulgated by the Executive Office adopting the plan as a statement of the state environmental policy, and via changes, if necessary, in the regulations of affected agencies. Memoranda of Understanding have already been signed between the Secretary and the five commissioners setting forth the fundamentals of the interagency agreement. A draft of the Secretary's regulation is now undergoing informal public review. (see Appendix A) A formal public hearing will be held following the procedures established by the state Administrative Procedures Act prior to Federal approval. Some agencies are already at work on revising their regulations to implement the CZM plan. While none of these regulations can be formally promulgated until the final program has been approved, it is anticipated that some programs will have their revised regulations in place soon after program adoption while others will be promulgated in the early stages of implementation.

The discussion contained in Part Two falls into two sections. Implementation Tools describes the various documents that will be used to institutionalize the plan--the Secretary's regulation, the Memoranda of Understanding, the maps and regional commentaries, and the guidelines. Implementation Roles describes the various actors who will be carrying out the Plan and the functions and authority of each.

### IMPLEMENTATION TOOLS

#### THE SECRETARY'S REGULATION

Through Regulations promulgated by the Secretary, the CZM plan shall be adopted as a statement of the state environmental policy for the coastal zone. The regulation is promulgated pursuant to Chapter 21A Sections 2, 3, and 4 empowering the Secretary to conduct comprehensive planning with respect to the functions of EOEAs to coordinate and improve program activities within EOEAs; to implement programs jointly agreed to by the Secretary and EOEAs; to serve as the primary agency of the Commonwealth for environmental planning; and to carry out the state environmental policy including those related to areas of critical environmental concern. Authority to promulgate regulations, both for the Secretary's regulations and any the EOEAs might promulgate in order to further clarify how they are implementing the plan, is found in Chapter 21A, Section 2 (28).

The effect of the Secretary's regulation is that all EOEAs are to carry out the CZM plan in full in granting permits, in disbursing

funds, or in conducting any kind of activity in the coastal zone. In other words, should an issue arise as to the weight to be given to CZM policies, they are to be dispositive. But, in order to insure that the application of the plan would not result in a situation which would be arbitrary and capricious, unlawful, or unresponsive to other public interests, there are two built-in mechanisms to insure flexibility.

#### Impermissible at Law

The first exception is where the plan might call for an agency to take an action beyond that permissible in law. Referring back to the discussion of Section 2 of 21A, if the scope of agency review is not sufficiently broad to allow them to follow the CZM plan, then neither the plan nor the Secretary's regulations require them to take "ultra vires" action. For instance, if the agency is mandated to protect an area for its flood damage and fisheries values, and the CZM plan and the HUD guidelines would call for all structures to be placed on pilings, then these conditions can be imposed. However, the agency could not require that the structure be painted in earth-tone colors, rather than in red, white and blue stripes, simply because the CZM plan encourages the voluntary incorporation of aesthetic concerns into facility design. Another aspect of this exception could be where the maps erroneously show the area to be a marsh, when in fact it is not, and to follow the plan would be an unlawful exercise of jurisdiction.

#### Compelling Public Interest

The second case where the CZM policies need not be followed to the letter is where the Secretary has utilized the conflict resolution mechanism and has determined that the CZM policies should not be followed either because of conflicts within the plan itself or because there are other more substantial and compelling public interests or concerns that would be jeopardized by the application of CZM policy. An example of this could be where the Secretary might allow the dredging of a shellfish bed in a Special Assistance Development Area.

This balancing will be made at the Executive level, not at the agency level. Pursuant to the procedures described in the conflict resolution section, all relevant parties (the EOEAA agency or agencies, CZM, the applicant if a permit is involved, etc.) meet for an informal issue identification session to clarify the issues to set before the Secretary. If matters cannot be resolved informally, it goes to the Secretary, and if requested, to a public hearing. By her own regulations, the Secretary is bound to act consistently with the plan; only in some unforeseen or unique situation where the application of CZM policy would be arbitrary and capricious or over-weighted by other public interests, will the policies not be applied.

#### THE MEMORANDA OF UNDERSTANDING

As noted before, the CZM Management system is the first major effort by the Executive Office of Environmental Affairs to coordinate all of the diverse environmental agencies which related to a specific resource into a complementary management network. Besides the Secretary's Regulations, and the plan itself, there are several other administrative tools which will be employed to further this effort.

First, there are the Memoranda of Understanding. Preliminary Memoranda have already been signed by the five Commissioners and by the Energy Facilities Siting Council. These are attached as Appendix A. They are basic statements of interagency cooperation. While interagency Memoranda are thought to be generally unenforceable because the Attorney General has never brought suit by one agency against another on the basis of such an agreement, they do serve a significant role. They embody the spirit of cooperation and joint effort fundamental to the success of the CZM Program. The Memoranda with the EOEa agencies are a formal recognition of the plan as a statement of the state environmental policy and a formal request by the Commissioners to the Secretary to jointly implement the CZM plan, triggering Chapter 21A, Section 4(2), as well as Sections 2, 3 and 4(1)(3). Secondly, the Memorandum with the EFSC includes a recognition that by their own law, the EFSC is bound to act consistently with the current environmental protection and resource use and development policies as adopted by the Commonwealth and, that the final plan is such a policy.

#### OTHER MEMORANDA OF UNDERSTANDING

While the above six Memoranda are key for establishing the basis of the management system, it is anticipated that many others will follow. These will be far more specific and of generally more limited scope. They will explain how agency activities will dovetail with CZM policies.

For example where the CZM policies require a modification in administrative practices, the memoranda will outline the new procedures. Where priorities must be assigned due to limited staff or financial resources, the Memoranda of Understanding will address these. Since CZM will also be supplementing the staff of certain agencies to ensure that there is adequate personnel to provide the requisite scrutiny for activities in critical areas, the Memoranda of Understanding will also record such agreements. Where it is important for certain programs to incorporate views of other agencies, the Memoranda of Understanding will detail this. It is anticipated that these Memos will be entered into, and dissolved, according to the needs of each agency and CZM to establish clear procedures and policies for the relevant aspects of each program.

#### EOEA AGENCY REGULATIONS

The staffs of CZM and the EOEa agencies have been meeting to determine how the CZM program will mesh with their agencies. As a result of these meetings, some agencies are already revising their regulations to reflect the pending changes. During the final part of the planning period and probably continuing into implementation, CZM will be assisting these agencies with this work.

In some cases significant work has already been done--the Environmental Code covers subsurface sewage discharges and the Wetlands Restriction Program lists permissible activities. For other cases like the Ocean Sanctuaries Program, the Scenic Rivers Program, or in integrating the Colonial Ordinance with the Waterways Program, major efforts by the agencies and CZM will be required. Some of the new regulations will address specific activities such as the construction of solid fill piers or dredging of contaminated spoil. Other regulations will discuss how agencies will conduct their activities in SRA's or APR's. For other programs, such as the Division of Water Pollution Control which

regularly revises water quality standards and classifications, CZM recommendations may be incorporated directly during regularly scheduled revisions. Appendix A includes a draft process regulation which serves as a model for incorporation of CZM policies by various EOE agencies. The procedures called for in the regulation will be incorporated into substantive regulations of various agencies, or the regulation may be promulgated separately.

Any regulations which are prepared will be promulgated pursuant to the Administrative Procedures Act and will allow full opportunity for public review and comment. They will also be fully binding upon the agencies.

#### THE CZM REGIONAL MAPS and MAP COMMENTARIES (THE REGIONAL CHAPTERS, VOL. II)

The regional chapters contain maps and map commentaries which have been prepared by CZM staff and regional citizen advisory committees. The CZM maps, which are to be used in tandem with the policies, serve three functions. One, they will assist agency personnel in evaluating permit applications. The maps inventory areas of marine productivity or natural hazard, plus areas of existing development and recreational opportunity. The maps will serve to facilitate agency awareness of an area. If a project is located in or near an area identified on the maps, the agency staff can then refer to the commentary, the policy sections, and to their own revised regulations for further guidance. Thus, the maps will serve as internal "flags" to notify all agencies that this area is significant for some reason. The discussions in the policy sections will provide information on why such areas are significant while the site-by-site commentary and the regulations will provide additional guidance for deciding how to respond to the decision at hand. The second function of the maps is to indicate to state and federal agencies where CZM would encourage or discourage funding. The maps help agency planners coordinate their programs with other programs. The third purpose of the maps is to provide information for people preparing MEPA and NEPA statements. Environmental impact reports require a description of the surrounding area. The maps and the commentary will help individuals and agencies prepare such reports. They will also help agencies and the public assess the adequacy of such reports and the effects the project may have on the environment. Finally, the maps and commentary will be subject to Federal consistency only when the recommendations in the regional summary are directly related to one of the enforceable policies in the CZM program.

The commentaries describe site specific concerns voiced at the citizen advisory committee and town meetings. Each commentary includes a description of the area, citizen concerns for the area and CZM comments which describe how the policies of Chapter 3 address the citizen concerns. Over the past three years, hundreds of citizens have contributed their time to improve the management of coastal resources. Through these maps, citizens will speak to the agency personnel who make decisions affecting these resources. When the commentaries reflect the policies of Chapter 3, they are an application of the policies to that site and are an enforceable part of the plan (see introduction to the Regional Chapter).

Part of the performance evaluation will be whether or not agency decisions reflected the comments included in the regional chapter, noted

why such comments were not possible to follow, or indicated whether any efforts were made by the agency to incorporate further public input into the decision-making process. Furthermore, the Secretary will incorporate the information in the regional chapters, where relevant, in resolving any conflicts.

#### THE GUIDELINES

In addition to the MOU's, regulations, and maps, CZM has also been working to prepare guidelines to facilitate uniform implementation of certain aspects of the CZM program. For example, the Division of Waterways and CZM have been preparing a rating system to rank the relative benefits of navigation improvement proposals. CZM and Waterways are also preparing a matrix to provide administrators with a quick guide to the impacts of their most frequently proposed activities upon the SRA's and APR's.

These guidelines and matrices will be tools to assist agency personnel in their new tasks. They will be available if any members of the public wish to see them but are intended to serve, as do worksheets, checklists, or flowcharts, as informal tools to help agencies implement the plan.

#### IMPLEMENTATION ROLES

The existing authorities of the EOEAs, overlaid with their Chapter 21A responsibilities, as well as their MEPA responsibilities, will be the basis for the CZM program. The Secretary's regulation provides the framework for the system. This section summarizes the functions and authorities of relevant EOEAs and pertinent CZM policies. The reader is referred to the Implementation section at the end of each policy in Chapter 3 for a more specific discussion of implementation strategy for that policy. Readers are also referred to Dean David Rice's report in Appendix E for a thorough review of the legal authority of each agency and how it satisfies the CZM act.

THE OFFICE OF THE SECRETARY WITHIN THE EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS is the overall fiscal, policy, planning, and legal decision-making entity for environmental matters. Besides the Secretary and his/her immediate staff, there are four units within the Office of the Secretary: the Coastal Zone Management Program; the Division of Conservation Services; the Massachusetts Environmental Impact Review Program; and the Division of Law Enforcement.

The Secretary of Environmental Affairs has the ultimate responsibility for policy setting and planning for all administrative units within Environmental Affairs. Through the exercise of this authority, the Secretary will ensure that the CZM Program is effectively implemented. Designation of Critical Areas of Environmental Concern, resolution of conflicts among EOEAs, periodic performance evaluations, and fiscal controls shall be among the measures taken by the Secretary to oversee CZM program implementation.



EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

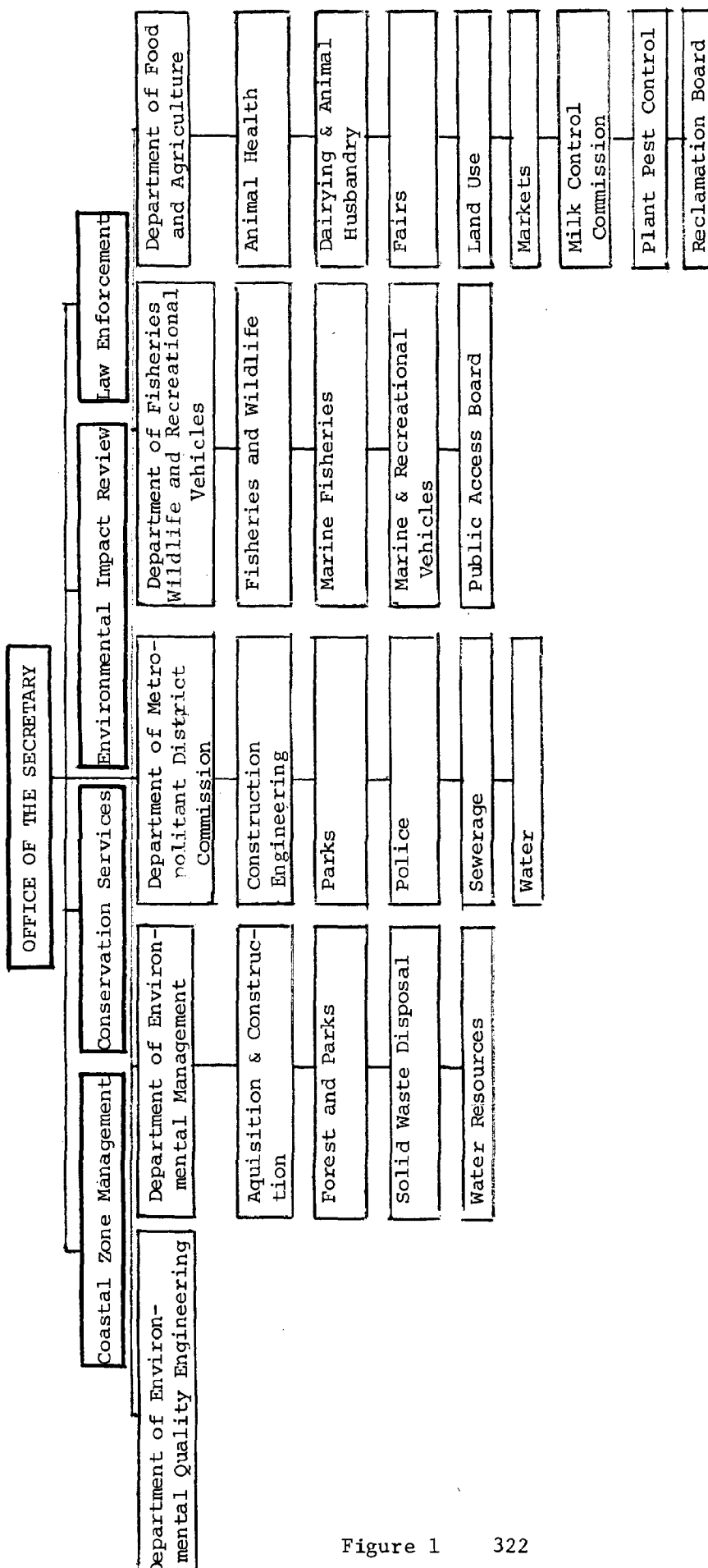


Figure 1 322

Designation of Critical Areas of Environmental Concern/Areas for Preservation or Restoration

The Coastal Zone Management Act requires states to develop a process for designating areas as Areas for Preservation or Restoration in order to protect them for their conservation, recreational, ecological, or esthetic values. In Massachusetts, such areas will be designated by the Secretary as Areas of Critical Environmental Concern, pursuant to Chapter 21A, Section 2(7).

The Reorganization legislation which created EOEA and granted it such extensive new powers also addressed the issue of areas of critical environmental concern. In Chapter 806, Section 40(e) of the statutes of 1974, the Legislature charged the Secretary:

To conduct a study relative to land use so as to identify and designate areas of critical environmental concern where uncontrolled development could result in irreversible damage to the environment.

Areas cited by Legislature included: "the coastal zone, inland and coastal wetlands; rare and valuable ecosystems and habitats; rivers, streams, and floodplains; natural areas and buildings, structures and sites of scenic, historical, architectural, archaeological, geological, biological, recreational significance; great ponds; lands of prime productivity; park, preservation, forest, recreation, or open space lands determined to be of regional significance; (and) fish, bird, and other wildlife management areas."

Pursuant to the Secretary's Regulations, nominations of areas may be made by ten citizens, by towns or Conservation Commission, by state agencies, RPA's or members of the Legislature. Consistent with this procedure, the CZM program has identified ten areas in the Massachusetts coastal zone as APR's which will subsequently be nominated as Areas of Critical Environmental Concern.

To insure that areas nominated are critical, the Secretary's regulations require that no area shall be eligible for designation unless it contains at least five characteristics from a list provided in the regulations. These characteristics include barrier beach systems, shellfish beds, erosion areas, historic sites, scenic areas, recreation sites, etc. If the Secretary decides to proceed with a designation public notice is given for a hearing to be held within twenty-five miles of the nominated area. Members of the public may make known their views concerning the proposed designation either at the hearing or by letter to the Secretary. In order to designate an area, the Secretary may consider the significance of the area in regard to the following criteria: public health, quality of the area, productivity, uniqueness, irreversibility of impact, imminence of threat, economic benefit, whether or not an otherwise insignificant impact could become significant, and other supporting factors. (Please refer to the discussion of APR's in Chapter Two or to the Secretary's Regulation for a full discussion of these criteria).

As a result of this designation, EOEAs will attach a high degree of scrutiny to their activities in the area, will not proceed with actions which could impair the values of the area, and will administer programs consistently with the EOEAs policies regarding the acquisition, protection, and use of such areas. State agencies outside of EOEAs will be unaffected by the designation except pursuant to a Memoranda of Understanding with the agency or pursuant to MEPA, where no project conducted or permitted by any state agency shall qualify for a categorical exemption if it would be located in an area of critical environmental concern. Prior to designation, constituent significant resource areas will be regulated under the policies and authorities relevant to the individual SRA.

#### Conflict Resolution

The Coastal Zone Management Act requires that the state management agency have the power to resolve conflicts among competing uses. As was noted earlier, under the Reorganization legislation (Chapter 21A, Section 4) the Secretary of Environmental Affairs is given the power to resolve conflicts. Please refer to the discussions in Part One of this Chapter and to Chapter 10 of the Rice Report (Appendix D) for an explanation of the conflict resolution powers.

Procedures outlined in the Secretary's regulation for the exercise of these powers, call for an initial informal issue identification session between the affected EOEAs and the Secretary. For any activity in the coastal zone, CZM is presumed to be an affected agency although it can withdraw from the proceedings. Any time a conflict has arisen on the basis of a permit decision or when the legal rights, duties, or privileges of a specifically named person are involved, a formal statement of issues may be prepared. Furthermore, formal public notice shall be issued and formal proceedings may be held according to the State Administrative Procedures Act. It is anticipated that this mechanism will frequently be used to resolve internal administrative issues, not permit issues, such as budgetary or staffing allocations, or divisions of responsibility among programs. As discussed before, pursuant to the Secretary's Regulations and the Memoranda of Understanding, the Secretary and the EOEAs are bound to implement the CZM policies except where the CZM policy would call for the EOEAs agency to take an action beyond that permissible at law or where the Secretary has determined that there are other more substantial and compelling public interests or concerns which would be jeopardized by the application of CZM policy.

#### Performance Evaluation

CZM implementation mechanisms will provide the resources and criteria necessary for EOEAs agencies to implement coastal policies. But to insure that the program is responsive, that it functions efficiently and that it meets the standards of the Coastal Zone Management Act, the Secretary will periodically conduct performance evaluations. The regulations outline the areas of inquiry the evaluations will cover including whether the EOEAs agency has made an initial determination of the applicability of any CZM policy to an issue; whether it conducted necessary investigations as to facts or site conditions; and

whether the EOEa agency incorporated CZM policy into its decision-making process and in its final decision.

Both in-process actions and completed actions will be included within the performance evaluation. The results of the evaluations will point the way for the future direction of the coastal zone management program, such as the need for a re-allocation of resources, for clarification of policies, or for new legislation.

Coastal Zone Management Program The CZM Program will remain in the Executive Office of Environmental Affairs and will continue to serve as the planning and policy-formulation arm of the Secretary for coastal zone affairs. As is detailed in the Secretary's Regulations and as is described above, CZM will aid the Secretary in performance evaluation. It will continue to undertake in-depth technical studies of key coastal issues such as the impact of George's Bank OCS exploration and development, dredge spoil disposal practices, and fishing industry revitalization with an eye to port and harbor revitalization, other economic development needs, and the continuing protection of productive marine areas. The CZM Program will also assume responsibility for active promotion of developments consistent with the CZM policies. In concert with other agencies, it will provide technical assistance to local communities. It will actively provide in-service training, technical assistance, clarification of policies, coordination among EOEa agencies, and financial assistance to EOEa agencies in order to enable them to effectively implement the CZM plan. The CZM Program will become involved in the routine activities of agencies in only four ways: (1) continuing its present role in reviewing actions through MEPA, NEPA, and A-95 reviews; (2) issuing its concurrence on certification statements as filed by private project applicants for federal permits or grants and direct actions as determined by federal agencies (see Part III); serving, either as an expert witness to formal hearings conducted by any EOEa agency on actions conducted in the coastal zone, or bringing cases to a hearing and (4) ensuring that EOEa agencies relay early notices of pending management decisions (acquisition, restrictions, etc.) in the coastal zone to allow adequate time for local governments to comment. (see Part V of this Chapter).

A significant portion of CZM funds will be used by EOEa agencies as they implement the CZM Program. Such funds will be applied to those programs key to the plan, for instance, in DEQE, the Wetlands and Waterways Programs or in DEM, the Wetlands Restriction Program. The CZM-paid staff will assist these agencies with their on-going responsibilities in the coastal zone and will be responsible for ensuring that the CZM policies are implemented expeditiously. The CZM program is fundamentally committed to the philosophy that it is preferable to have a decision made properly in the first instance, with adequate staff and proper criteria, than to create a two-level monitoring system with the concomitant delays and costs inherent in such arrangements.

The Division of Conservation Services (DCS) assists local conservation commissions in their efforts to preserve and acquire open space land, including the administration of a program (Self-Help) to provide partial reimbursement for lands purchased for conservation and public recreation.

Conservation Services provides financial assistance to 15 regional Conservation Districts, and coordinates their activities with other agencies in establishing a team approach to environmental problem solving. Finally, Conservation Services administers a land conservation restriction program which allows property owners to retain title to property while remaining legally bound not to develop it. The land owner receives tax advantages for accepting such restrictions. The Division, in administering the Self-Help Program, will accord priority to acquisition requests for areas with a high propensity for tidal flooding and erosion and which serve as buffers for landward areas (Policy 10),<sup>3</sup> urban waterfront sites expanding visual and physical access to waterfronts and which encourage urban waterfront redevelopment (Policies 15 and 20); trail development proposals linking existing coastal recreation sites to nearby coastal inland facilities (Policy 22); and new small-scale coastal recreation areas in recreation deficient areas where traffic impacts can be minimized (Policies 21 and 26).

Environmental Impact Review This Division of the Secretary's staff is responsible for the evaluation and monitoring of environmental impact statements required by the Massachusetts Environmental Policy Act (MEPA). MEPA established an environmental review process for state actions, projects with state funding contributions, or projects requiring permits or licenses from state agencies. The intent of MEPA is to improve environmental planning and the design of activities so that they minimize damage to the natural environment, but not necessarily to stop them. As an information device, MEPA attempts to provide full disclosure of the environmental consequences of state related activities. The MEPA staff also reviews and comments on appropriate federal projects filed under the National Environmental Policy Act (NEPA).

State agencies proposing to issue a permit or license or to undertake directly a development project or fund such a project must submit a completed Environmental Assessment Form (EAF) to the MEPA Division. The EAF describes the project and identifies potential environmental impacts. The EAF is published in the Monitor thereby giving governmental agencies and the public an opportunity to comment on the filing agency's identification of potential impacts and determination of whether or not an environmental impact report should be prepared.

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<sup>3</sup> In the interests of brevity only the principal authorities and the policies most pertinent to them have been discussed. Situations may well arise where other CZM policies will apply to these programs.

Within twenty days after publication of the EAF in the Monitor, the Secretary of Environmental Affairs issues a decision on the filing agency's determination as to whether an environmental impact report need be prepared. If the Secretary disagrees with the filing agency, the agency must submit a revised EAF, and, if necessary, prepare an environmental impact report. Environmental Impact reports are reviewed by the Secretary of Environmental Affairs with respect to their adequacy in addressing alternatives to the proposed action and significant environmental impact. The proposed state agency licensing, permitting or directly undertaking a project may not proceed until either the Secretary agrees an impact report need not be prepared or an impact report is prepared.

The MEPA statute also directs all agencies of the Commonwealth to "review, evaluate, and determine the impact on the natural environment of all works, projects, or activities conducted by them" and to "use all practicable means and measures to minimize damage to the environment." The MEPA statute further provides, "unless a clear contrary interest is manifested, all statutes shall be interpreted and administered so as to minimize and prevent damage to the environment." This legislative charge makes possible the closer scrutiny and regulation of projects or activities under such EOEAs programs as the Wetlands and Waterways Programs, thereby ensuring that the environmental concerns in CZM policies can be addressed.

The EAF and impact report preparation procedures provide the information and evidence upon which agencies can carry out their mandated MEPA responsibilities to minimize damage to the environment. CZM, in concert with other state agencies and the public, will review EAF's and impact reports to ensure that impacts of particular concern to the CZM program are identified and addressed. Specifically, MEPA will be used to provide the environmental assessment information and public input upon which to base permit or funding approval decisions in the application of CZM policies affecting the alteration of salt marshes, salt ponds, dune areas, barrier beaches, shellfish flats, and sandy beaches (Policy 1); development within Areas for Preservation or Restoration (Policy 2); public subsidization of development within the 100-year tidal flood zone which may exacerbate existing hazards, be damaged by flood and erosion-related forces, and/or promote growth and development in damage prone areas or degrade natural buffers (Policy 7); construction in water bodies and in ports (Policies 4 and 17); off-shore sand and gravel mining and dredge disposal (Policies 5 and 6); the preservation of lawfully designated historic sites or districts (Policy 14); the expansion or acquisition of coastal recreation sites and the degree to which transportation impacts are minimized, effects on fragile resources protected, and multiple uses promoted (Policies 21, 23, 25 and 26); the evaluation of impacts on public recreational facilities (Policy 27); and the construction of flood

or erosion control projects (Policy 12). Through comment on MEPA impact reports on publicly funded development, CZM will strive to bring visual environment and urban waterfront revitalization concerns to bear on the design and location of publicly funded development (Policies 13 and 20). In addition, MEPA impact reports will provide environmental assessment material to the Energy Facilities Siting Council to help it make decisions on the granting of certificates of environmental impact and public need. The MEPA process will also be relied upon to help the state and developers explore feasible alternative locations and ways of carrying out proposed projects to ensure the highest possible conformance with CZM objectives (Policy 37).

The Division of Law Enforcement (DLE) has the responsibility of enforcing, through legal action if necessary, all of the laws and regulations the Executive Office is empowered to enforce. The 70-member force ensures compliance with the Commonwealth's hunting, fishing, and trapping laws, as well as laws relating to forests, forest fires, and the operation of motor-boats and snowmobiles. DLE is involved in the detection of inland and coastal wetland violations under the state's wetland protection laws. DLE officers work with the Division of Water Pollution Control in detecting oil spills and other pollution sources in an accelerated program to clean up Massachusetts' waters. The Division will be relied upon to ensure that the laws and regulations implementing coastal zone management are enforced. These include those pertaining to alteration of salt marshes, dune areas, salt ponds, barrier beaches, shellfish flats, and sandy beaches (Policy 1), development activity in Areas for Preservation or Restoration (Policy 2), construction in waterbodies and in ports (Policies 4 and 17), conformance to water quality standards (Policy 3), dredging (Policy 5), off-shore sand and gravel mining (Policy 6), and construction of private flood or erosion control projects (Policy 12).

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING (DEQE) is basically Massachusetts' equivalent to the federal Environmental Protection Agency. DEQE serves as the state's principal environmental watchdog, continually monitoring the quality of our air and waters. DEQE also administers regulatory programs to reverse any current environmental degradation and to guarantee the future quality of our air, land, and water resources. As shown below, the authorities and programs of this Department play a particularly important role in implementing the CZM Program.

In the fall of 1976 the Department of Environmental Quality Engineering instituted a significant change in their permit issuance

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

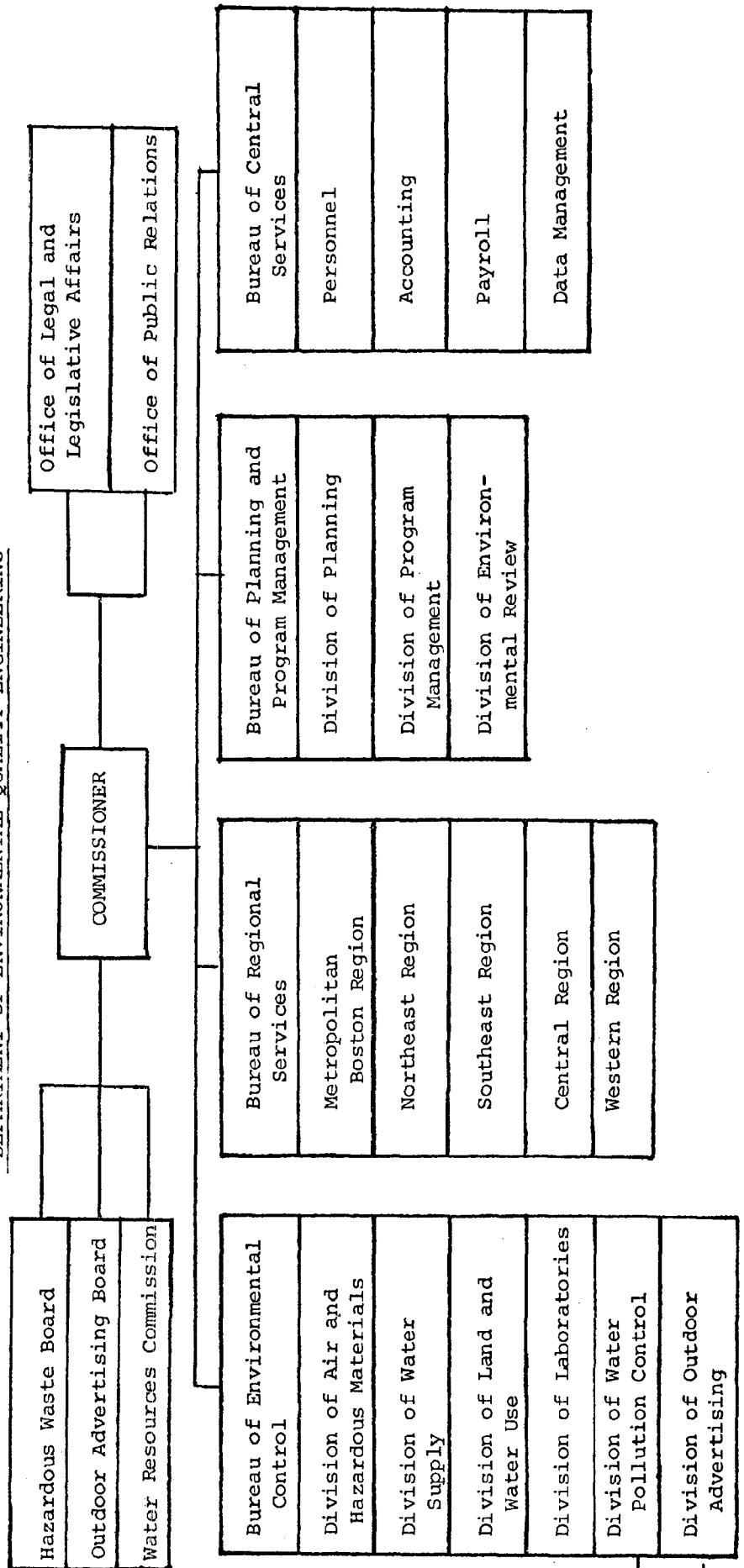


Figure 2 329



procedures. Since a majority of DEQE authorities are relevant to CZM implementation, CZM staff and procedures will be closely tied to DEQE programs.

There will be five regional offices in the Commonwealth, three in the coastal zone. One office will cover the greater Boston area, one will handle the North Shore, and the third, located in Middleboro, will cover the South Shore, the Cape, and Buzzards and Mt. Hope Bays. Routine permit decisions by DEQE will be made in the regional office. A single application will be received by the District Engineers who will determine which DEQE authorities will apply and the relevant staff people to evaluate the application for the region. Since all DEQE staff will be housed together and located closer to their respective areas, the opportunity for integrated review and for streamlined decision-making is greatly increased. The MEPA review process and the water quality determinations will continue to be performed in the Boston offices.

An Environmental Engineering Directory has been prepared by DEQE with CZM support which describes all of the programs in DEQE and the procedures of each program. The Directory describes the purpose, authority, jurisdiction, procedures, relationship to MEPA, prerequisites, and life of permit for each license or permit issued by the Department. It is intended to be a useful guide for developers, agency personnel, and citizens.

DEQE conducts planning activities as well as regulatory ones. The 208 water quality plans (pursuant to the Federal Water Pollution Control Act of 1972) are mainly being prepared by Regional Planning Agencies with oversight and coordination by DEQE.

Wetlands Program within the Division of Land and Water Use gives local conservation commissions the authority to review proposals for projects in wetlands. Wetlands include "any bank, wetland, beach, dune, flat, marsh, bordering on the ocean." Regulations issued by the Commissioner of DEQE define "bordering" as including the land 100 feet horizontally landward from the water elevation of the 100 year storm, or if greater, 100 feet horizontally landward from the bank of any beach, dune, flat, marsh, meadow, or swamp. All dredging, filling or other alteration of a wetland is unlawful without filing a Notice of Intent, both with the local conservation commission and the Commissioner of DEQE. If the conservation commission, or the Commissioner of DEQE, find that the proposed work or alteration presents a significant threat to the interests of the Wetlands Protection Act (public and private water supply, ground water supply, flood control, storm damage prevention, prevention of pollution, protection of land containing shellfish, or the protection of fisheries), an Order of Conditions on the work of alteration shall be imposed to regulate the project and protect the interests of the Act. An Order of Conditions may allow the applicant to proceed with the project, may impose conditions upon the project, or may prohibit it if it cannot be built without seriously damaging the interests of the Wetlands Protection Act. A local conservation commission's Order of Conditions may be appealed to the Commissioner of DEQE or the Commissioner himself may invoke the appeal process.

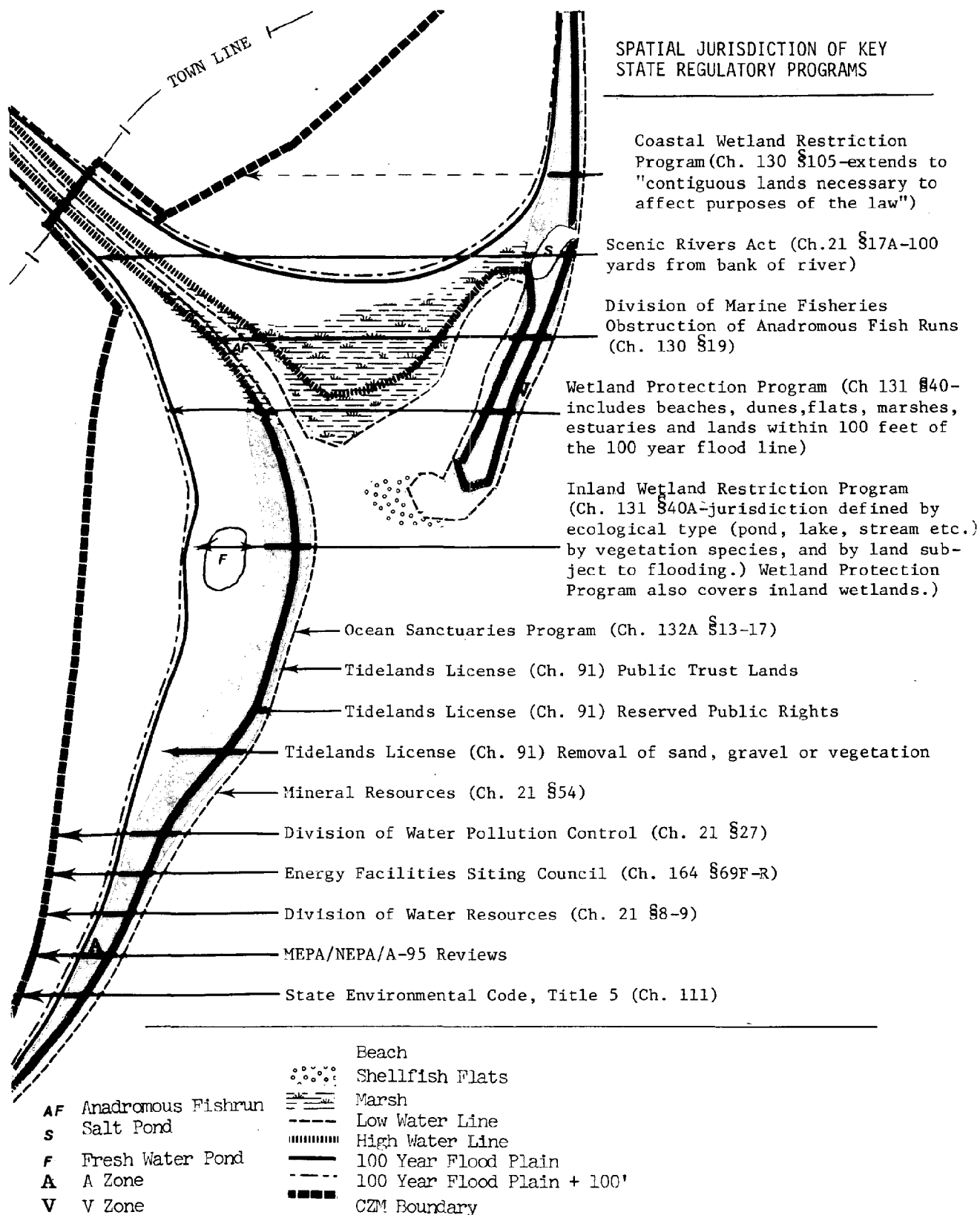


Figure 3 331

Policy 1 identifies shellfish flats, dunes, salt marshes, salt ponds, barrier beaches, and sandy beaches as in and of themselves vitally significant to the interests addressed by the Wetlands Protection Act. The MEPA statute, calling for the interpretation and administration of existing statutes to minimize and prevent damage to the environment further justifies designation of these particular coastal ecosystems as environmentally significant. Hence, revised rules and regulations for the Wetlands Program, including the Commissioner's authority to intervene, shall be relied upon to ensure that projects and works in such areas are conditioned so as to protect fully the Wetlands Act's seven interests (Policy 1). More careful and heightened scrutiny under the Wetlands Program and MEPA of all developments up to the 100 year flood plain in Areas for Preservation or Restoration (APR) will be relied upon to carry out Policies 2 and 8, thereby ensuring that APR's which by their designation have been deemed singularly significant for, inter alia, their fisheries, flood protection, and pollution prevention qualities are protected to the fullest extent that the Wetlands Protection Act and MEPA allows. In conjunction with the Waterways Program (see below), through revised rules and regulations, the Wetlands Program shall be relied upon to condition construction on water bodies so as to minimize interference with water circulation and sediment transport and to preserve water quality and maintain productivity (Policy 4); minimize significant adverse effects from public or private flood or erosion control projects on adjacent properties in downcoast areas (Policy 12); ensure that dredging and dumping of dredged material minimize adverse effects on marine productivity (Policy 5); and to encourage maritime dependent industrial development in port areas (Policy 17). For works, projects, or activities other than those effected by Policies, 4, 5, 12, or 17 or which occur within the 100 year flood plain but outside of the areas identified in Policies 1 and 2, conservation commissions and the Commissioner of DEQE shall continue to protect, as before, the interests of the Wetlands Protection Act.

Waterways Program within the Division of Land and Water Use has licensing authority over tidelands, harbors, and certain rivers below the high water mark. Activities covered by such licenses include filling, wharf construction, bridges, and pipelines. DEQE, as trustee over public lands below low water issues licenses, and not permits, for the permission to interfere with these public lands and public rights. Between the low water mark and the high water mark, the land is in private ownership, but subject to a reservation to the public in their rights to fish, fowl, and navigate. Above the high water mark, landowners may not remove sand, gravel or vegetation which might injure the waterway.

Given the trusteeship functions of the Waterways Program and its mandate through the MEPA statute to administer licensing so as to minimize and prevent damage to the environment, the program shall principally be relied upon to condition construction on waterbodies so as to minimize interference with water circulation and sediment transport and to preserve water quality and marine productivity (Policy 4); to minimize significant adverse effects from public and private flood or erosion control projects on adjacent properties or

downcoast areas (Policy 12); ensure that dredging and disposal of dredged material minimizes adverse effects on marine productivity (Policy 5); to protect salt marshes, dunes, shellfish flats, anadromous fish runs, sandy beaches, salt ponds, barrier beaches, and Areas for Preservation or Restoration (Policies 1 and 2); to ensure off-shore sand and gravel mining does not adversely affect marine resources and navigation (Policy 6); to encourage maritime commerce and related development in port areas and to deter pre-emptions of needed port space (Policy 17); and to minimize adverse effects of off-shore energy exploitation on fisheries, water quality, wildlife, and recreational values (Policy 33). (Note: the Energy Facilities Siting Council may, on request, grant utilities a certificate of environmental impact or public need for a particular energy facility which will override the condition or terms of a Waterways license.)

The Waterways Program also funds such public works as wharf improvement, public piers, jetties, bulkheads, shore protection works, channel dredging and maintenance, dams, and wreck removals. In addition, the Waterways Program may, at a community's request, develop harbor plans through acquiring, improving, and developing needed pier and terminal facilities. Such facilities may then be leased for private sector operations. In administering this public works program, DEQE will give priority to: project requests which are supportive of fishing interest needs (Policies 7, 18 and 19); non-structural measures for the restoration and stabilization of foreshore and shore areas in hazardous zones (Policy 11); structural solutions in developed areas only when public benefits will be widespread and adverse environmental effect minimal (Policy 12); maintenance dredging in developed harbors and port areas and channel deepening or expansion only when the project provides broad region-wide boating benefits, enhances benefits to the fishing industry or produces economic returns to maritime shipping or other marine industry, and/or reduces navigational safety risks (Policy 18); pier, wharf and other navigation projects stimulating the expansion of water-dependent uses in port areas and developed harbors when the risks of damage to the marine environment are minimal (Policy 19); project requests supportive of urban waterfront redevelopment and renewal (Policy 20).

Community Sanitation Program within the Division of Land and Water Use regulates the siting, placement, and design of sub-surface sewage disposal with a capacity of 15,000 gallons per day or more (i.e., septic tanks, leaching fields, cesspools, etc.) the location of septage disposal sites, sewage treatment plant sites, mobile home parks (siting and lot size and adequacy of waste disposal facilities), and the siting and design of solid waste disposal facilities (including sanitary landfills). Sub-surface sewage disposal systems with a capacity of less than 15,000 gallons per day are regulated by local boards of health to ensure compliance with the State Environmental Code. The State Environmental Code deals with matters affecting the environment and the well being of the public; it stipulates that sub-surface sewage disposal systems must be set back from water courses, wells and property lines. It restricts the use of sub-surface disposal systems in areas with steep slopes, bedrock, or other impervious materials near the surface and soils unsuited for adequate percolation and adsorption of wastes. The Community Sanitation Program shall be administered

consistently with the implementation of CZM policies through the Wetlands Program (see above). Moreover, areawide waste water management planning, authorized by Section 208 of the Federal Water Pollution Control Act of 1972 is being conducted in all areas of the coastal zone save the Merrimack Valley and Nantucket. One of the primary foci of the 208 planning effort being carried out by regional planning agencies is the abatement of pollution from non-point sources such as storm run-off and septic tank leachate. CZM will be reviewing 208 plans and working to ensure their consistency with CZM policies. Thus, the 208 strategies for control of non-point sources of pollution (some of which will call for revision in the administration of the community sanitation program) will simultaneously serve to implement CZM policies.

The authority over siting of sewage treatment plants shall be used to ensure plant locations and outfalls do not produce adverse effects on marine productivity, public health, or the attractiveness of recreational beaches (Policy 3).

Division of Outdoor Advertising regulates billboards, signs, and other advertising devices. Rules and regulations promulgated by the Board prohibit the use of off-premise billboards and other forms of advertising along primary roads in areas that are not zoned for commercial or industrial use or are not of a predominant business character. The Board also has the power to designate areas of historical, scenic, or environmental significance as Sign Free Areas or Sign Free Corridors wherein no permits for advertising will be granted or renewed. This power will be relied upon to implement Policy (16).

Division of Air and Hazardous Materials is responsible for ensuring that new and modified sources of air pollution, (1) conform to emission limitations contained in Massachusetts regulations, Federal New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAPS), and (2) assure continued conformance with Massachusetts and Federal National Ambient Air Quality Standards (NAAQS). Sources subject to this regulatory review include fossil fuel utilization facilities having energy input capacity greater than 3 million BTU's per hour; incinerators; and industrial facilities such as foundries, refineries, paper manufacturing plants, and other manufacturing plants. Additionally, the Air Quality Program regulates the storage and loading facilities for petroleum products, gas and other hydrocarbons to minimize unnecessary emissions of hydrocarbons which contribute to the formation of photochemical oxidants or smog. Through the Air Quality Program, the requirements of the Federal Clean Air Act as amended will be carried out, and the Energy Facilities Siting Council advised of air quality impacts of siting energy facilities. The Council cannot approve facilities which will violate Federal air quality standards. Should conformance to CZM policies by other EOEa agencies that regulate the location of facilities or plants subject to the Air Quality Program make compliance with Massachusetts and Federal National Ambient Air Quality Standards (NAAQS) infeasible or impracticable, as evidenced in an environmental impact report prepared pursuant to MEPA, the Secretary of Environmental Affairs' conflict resolution procedures shall be invoked. The Secretary shall strive to gain approval for the solution which conforms to NAAQS standards, other EOEa laws, and the CZM policies.

Division of Water Pollution Control exercises permitting authority jointly with EPA over point sources of discharge of pollutants into the waters of the Commonwealth, including municipal sewage treatment works. DWPC also exercises permitting authority over the discharge of hazardous substances, major non-point discharges, and sewer extensions and hook-ups. Such permits are granted only if the discharge, or treatment conform to effluent limitations, water quality standards for the receiving waters, and comprehensive plans adopted by the Division. Such plans may include comprehensive river basin plans and areawide waste treatment management plans. The area-wide plans authorized by Section 208 of the Federal Water Pollution Control Act are now being prepared by regional planning agencies, DEQE and DWPC, for subsequent adoption by the Division. Prior to their adoption, CZM will review them and ensure consistency with CZM policies regarding the protection of salt marshes, anadromous fish runs, barrier beaches, sandy beaches, shellfish flats, and salt ponds, and Areas for Preservation or Restoration (Policies 1 and 2), and the protection and maintenance of water quality (Policies 3 and 34).

The Division, subject to review by EPA, is also responsible for awarding state and federal grants for the construction or improvement of sewage treatment works and collection systems. In the award of such funding, the Division will ensure that facilities proposed for hazardous areas will not exacerbate existing hazards, will be reasonably safe from damage, and will not promote further growth and development of the hazardous area (Policy 9). The Division will also continue to give priority to funding facility construction or upgrading in existing development centers, including ports so that continued growth and development can be supported there and will ensure that facility design and capacity will encourage consolidation of future development (Policies 19 and 35).

Division of Mineral Resources within the Division of Land and Water Use is empowered to license the exploration for mineral resources in Massachusetts coastal waters and the seabed and leasing rights for extraction of such mineral resources as have been discovered. A lease for extraction of a mineral resource may not be issued until a public hearing is held and until information is made public on the quantities and quality and location of the mineral resource available within Massachusetts and on the extent and risk of harm to marine and other natural resources of the proposed mining.

This authority will be relied upon to ensure sand, gravel, and other mineral mining and related activities do not adversely affect fisheries, water quality, and recreational resources (Policies 6 and 33).

THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (DEM) embodies the state's commitment to protect, enhance, develop, and manage the natural resources of Massachusetts for this and future generations. It is charged with the general care and oversight of the environmental management of the Commonwealth and of its adjacent waters and may propose and carry out measures for the protection, conservation, control, use, increase, and development thereof. DEM manages lands which cover 225,000 acres and are held for timber, recreation and watershed purposes. As

shown below, the Department's Ocean Sanctuaries, Wetland Restrictions, and Scenic Rivers Programs are important to several CZM resource protection policies.

Ocean Sanctuaries. Five ocean sanctuaries have been created by legislation to protect all state waters except those from Swampscott to Marshfield and those in Mt. Hope Bay. While the terms of the five sanctuaries differ, in general such activities as the removal of sand, gravel, or minerals, dumping, or any new waste discharge are prohibited. Shore protection, water navigation aids, and fish harvesting are permitted. These authorities coupled with the general charge to DEM to care for and control the sanctuaries will be relied upon to protect salt ponds, shellfish beds, beaches below mean low water, and Areas for Preservation or Restoration (Policies 1 and 2); ensure maintenance of high water quality in coastal waters (Policy 3); ensure that construction in water bodies minimizes interference with water circulation and sediment transport, and preserves water quality and marine productivity (Policy 4); ensure that dredging and disposal of dredged material minimizes adverse effects on marine productivity (Policy 5); ensure off-shore sand, gravel, and mineral mining or energy development do not adversely affect fisheries, water quality, and recreational resources (Policies 6 and 33).

Coastal Wetlands Restriction Program authorizes the DEM Commissioner, after a public hearing, to restrict from alteration coastal wetland areas, in order to protect public safety, health and welfare, public and private property, and wildlife and marine fisheries. Under the Coastal Wetlands Restriction Act, areas that may be restricted include "any bank, marsh, swamp, meadow, flat, or other low land subject to tidal action or coastal storm flowage and such contiguous land as the Commissioner of Environmental Management reasonably deems necessary to affect by any such (restriction) order in carrying out the purposes of the (Act)." Under the terms of the Act, restrictions take the form of Orders, which, once effected property owners are notified and the Orders adopted, are placed on the property owner's title and recorded with the Registry of Deeds. The implementation of the coastal wetlands restriction program will be oriented, on a priority basis, to protecting Areas of Preservation or Restoration (Policies 2 and 8) and, thereafter, to protecting remaining unrestricted salt marshes, barrier beaches, sandy beaches, dune areas, shellfish beds, salt ponds (Policy 1).

Scenic Rivers Program provides for the designation and restriction of rivers for scenic and recreational purposes. The Scenic Rivers Act authorizes DEM to regulate the alteration or pollution of designated rivers and contiguous land within 100 yards of their banks. The program will be relied upon to protect, on a priority basis, scenic and recreational qualities of coastal rivers found within Areas for Preservation or Restoration (Policy 2), and thereafter rivers meeting the criteria of Policy 16.

The Division of Water Resources is under the Water Resources Commission (composed of the 5 EOE commissioners, and 4 public members, and the Commissioner of Commerce and Development) and has jurisdiction over matters concerning watersheds, water systems, storage basins, underground and surface water supplies, water conservation and flood prevention.

The Commission is intended to act as a coordinating agency between all departments of the Commonwealth. Insofar as alteration of coastal water bodies or marine ecosystems will affect the quality and quantity of fresh water supply (e.g., depletion or contamination of ground water supply), Policies 1 - 5 of the Marine Environment section, 8 and 9 of Coastal Hazards, and Policy 34 of the Public Investment section will be relevant to the concerns of the Division and the Commission.

State Recreation Areas. The DEM Commissioner is authorized to acquire by purchase or use of eminent domain lands outside of the metropolitan parks district for public conservation or recreation purposes. In carrying out this authority, DEM will be guided by CZM's recreation policies giving preference to the acquisition and development of smaller coastal recreation sites in recreation deficient regions (Policy 26); ensuring that traffic related impacts to coastal recreation facilities are minimized (Policy 21); according priority to development of linking existing recreation sites by trails (Policy 22).

THE DEPARTMENT OF FISHERIES, WILDLIFE, AND RECREATION VEHICLES (DFW&RV) manages and studies inland and marine fish and wildlife resources. It works to improve markets and resources for commercial fisheries and opportunities for public access for recreational boaters and sports fishermen. It also enforces the state's laws concerning motorboats, snowmobiles, trail bikes, and other off-road vehicles. The programs in DFW&RV of major interest to CZM implementation are Marine Fisheries and Public Access.

Division of Marine Fisheries regulates the harvest of fish in coastal waters and is charged with aiding the promotion and development of the commercial fishing industry. The Division also operates a program to assist coastal communities to increase the supply of shellfish and to ensure that construction on coastal streams does not impede the passage of anadromous fish to spawning areas. These responsibilities will be relied upon to promote fisheries in the coastal zone (Policy 7) and to ensure that construction on water bodies does not prevent anadromous fish passage (Policy 4). The statutes establishing the Division of Marine Fisheries prohibit unauthorized discharges into coastal waters of oil, sewage, and other substances hazardous to fish and shellfish. Municipalities may sue for damages to shellfish flats. The statutes also establish that unauthorized dischargers are liable for damage to fisheries and subject to criminal penalties. In addition, prior to the grant of a discharge permit by the Division of Water Pollution Control, except for discharges of thermal effluent, the Division of Marine Fisheries must be consulted with respect to the damage that may result from the discharge to fisheries, including shellfish. These liability, penalty, and review authorities as well as the Division's expertise on fisheries will be relied upon to ensure that discharge permits safeguard fishery resources (Policy 3).

Public Access Board is charged with acquiring and developing public access points to great ponds or other waters and trails for paths for hiking and other recreational activities. The Board's acquisition, construction, and maintenance program is funded by the gasoline fee on water-craft and registration fees from recreational and show travelling vehicles. In providing new access points and developing trails, the



Board will be guided by CZM recreation policies; giving preference to smaller recreation sites in recreation deficient regions (Policy 26); according priority to development of trails linking coastal recreation sites (Policy 22); ensuring that traffic related impacts to coastal recreation facilities are minimized (Policy 21); and giving priority to projects in developed harbors and ports.

DEPARTMENT OF THE METROPOLITAN DISTRICT COMMISSION (MDC) was the nation's first legally constituted metropolitan district. By utilizing economies of scale and efficiencies not available to individual communities, it currently services 54 cities and towns in the greater Boston area with one of the largest domestic water supply and distribution systems in the world, a sewer system with thousands of miles of local and trunk sewer lines, and a recreation system exceeding 12,500 acres of land. Reservations, ice skating rinks, swimming pools, beaches, road and parkways, playgrounds, ball courts, zoos, and museums plus a substantial police force all fall under MDC control. For the geographic areas of its jurisdiction, the MDC carries out many of the same functions as the Division of Water Pollution Control for discharge permits and provisions of sewer service, and the Department of Environmental Management for recreational park acquisition and development. The MDC may permit communities to connect with the metropolitan sewer system. It may maintain reservoirs and regulate water quality in providing water to communities or public institutions and facilities, even those beyond its district. (Provision of water to outside communities or facilities is subject to special contract and entrance fees.) The commission has broad management authorities including powers to acquire lands, construct facilities, generate electricity for sale, alter directions of water courses, construct or alter the location or grade of roadways and access thereto and place structures in Boston Harbor (with the approval of Waterways). It may regulate the activities of abutting owners near rivers, ponds and open spaces in order to allow for public access for recreation purposes.

THE DEPARTMENT OF FOOD AND AGRICULTURE has the legislative mandate to "preserve agricultural lands, and to insure an adequate supply of high quality farm products." The Department inspects and grades food products and fairs, licenses producers, and investigates market prices. It also administers the agricultural assessment program, which provides farmers preferential tax rates in exchange for retaining land in agricultural production. This latter program will be relied upon to keep agricultural land in the coastal zone productive, thereby preserving open space (Policy 14).

OTHER STATE AGENCY PROGRAM AND REGULATORY AUTHORITIES TO IMPLEMENT CZM

Direct reliance on state agency and regulatory authorities outside of EOEa to carry out the CZM Program will be small, with the exception of the Energy Facilities Siting Council (EFSC) and the Martha's Vineyard Commission. The EFSC will be the ultimate means by which CZM policies on energy are implemented. Coordination with other state agencies to implement the CZM Program will take place through:

- maintenance of working-level relationships between CZM and such state agencies as the Departments of Community Affairs and Public Works, the Office of State Planning, and regional planning agencies to coordinate provision of technical and financial assistance to communities and to ensure planning for public infrastructure investments complies with state growth and development and CZM policies;
- cabinet level review for inter-secretariat coordination or advice to the Governor on major state development actions or new program initiatives (in such reviews, the Secretary of Environmental Affairs will speak for CZM policy concerns); and
- review of environmental impact reports prepared under the Massachusetts Environmental Policy Act for state funded and permitted projects.

The particular programs and regulatory authorities of other state agencies and their relevancy to the CZM Program are described below:

Energy Facilities Siting Council (EFSC) has jurisdiction over determining the need for and the siting of electric generating, gas, and oil facilities. The Council is composed of the heads of four state cabinet level departments (Consumer Affairs, Environmental Affairs, Administration and Finance, and Manpower Affairs) and five gubernatorial appointees--one to be a professional engineer, one to represent environmental interests, and one each from the electric, gas, and oil industry. The Council's jurisdiction includes:

Electric Facility--any bulk generating unit including associated buildings and structures with a design capacity of 100 MW or more; any new transmission line of more than one mile in length and 69 KV or more designation; and any ancillary structure, including but not limited to fuel storage facilities.

Gas Facility--any unit including associated facilities designed for or capable of the manufacture or storage of gas; and any new pipeline for the transmission of gas of more than one mile in length and having a normal operating pressure of 100 pounds per square inch or more.

Oil Facility--any unit, including associated buildings, designed for refining oil or refined oil products; any unit capable of storing more than 500,000 barrels of oil or refined oil products; and any new pipeline for the transportation of oil or refined oil products greater than one mile in length.

The statutory process by which the Council makes decisions is based on reviewing projections of energy demand provided by electric, gas, or oil companies and assessing the need for new, proposed energy facilities in light of the projections. The Council's decisions are given in the

form of approval for "forecasts." Such approval may be conditional or preliminary, with the EFSC endorsing or modifying the projection of energy demand but reserving the right to review sites and facility plans at a later date. In the review and approval of forecasts and energy facilities, the Council is bound by statute to insure a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. Moreover, the Council, in its review, must determine whether the proposed facilities are consistent with current health, environmental protection, and resource use and development policies as adopted by the Commonwealth. The EFSC may inquire into the need for the facility, the economics of the facility, and alternative proposals and sites.

Until the EFSC approves a forecast, other state permitting agencies may not issue permits that may be required for the construction of an energy facility. Should state permitting agencies or local authorities impose onerous conditions, delay, or deny needed permits, the affected company may appeal the decision to the EFSC which is authorized to issue a Certificate of Environmental Impact and Public Need which serves in lieu of the permit in question.

Through a Memorandum of Understanding between the Council and the Secretary of Environmental Affairs (see Appendix A) the EFSC has agreed to recognize the final CZM plan, as approved by the Governor, as a statement of health, environmental, and resource use and development policies of the Commonwealth. Further, the Council has agreed to act consistently with the policies of the plan. To this end, the Council shall adopt necessary regulations and procedures. These shall provide for:

- (1) review and comment by EOEa for any forecast or application for a Certificate of Environmental Impact or public review prior to any hearing by the Council;
- (2) cooperation in developing guidelines for data required of applicants prior to initial review of proposed facilities;
- (3) for any proposed coastal facility, the submission by the applicant, of information on at least two alternative sites, including one inland site; and
- (4) standing of the CZM program in EFSC proceedings on energy facilities proposed to be sited in the coastal zone.

In addition, the Council, in reviewing facilities proposed for critical areas of environmental concern (APR's) has agreed to give prime consideration to the environmental impact in these areas.

Executive Office of Communities and Development, the Executive Office of Transportation and Construction, Office of State Planning, and Regional Planning Agencies: All provide some form of technical assistance to communities. Each also plays a role in advising on and planning for

public infrastructure investments such as highways, publicly financed urban redevelopment, and sewerage services. Also, the Department of Community Affairs (within EOCD) has approval powers over public urban redevelopment authorities and the Department of Public Works (within EOTC) over transportation improvements using state or federal funds. Maintenance of working-level relationships, early consultation, membership on interagency committees, and program-specific agreements will be relied upon to formalize the measures these agencies will take to meet their MEPA responsibilities to minimize damage to the environment regarding their activities in the coastal zone, to avoid duplication of effort and promote wise allocation of scarce technical assistance staff resources, and to ensure consistency of program actions with CZM policies.

When necessary, CZM will also rely on the use of federal consistency and review and comment under the Massachusetts Environmental Policy Act to enforce compliance with CZM policies. Coordination with these other state agencies will be particularly important with respect to encouraging the expansion of maritime dependent uses in port areas and developed harbors (Policy 19); encouraging urban waterfront redevelopment and renewal in developed harbors in order to link residential neighborhoods and commercial downtown areas with visual and physical access to the waterfront (Policy 20); ameliorate transportation problems to coastal recreational sites (Policy 21); and encouraging consolidation of future development and according priority to prior infrastructure investments in existing urban and town centers (Policy 34).

The Martha's Vineyard Commission is a regional planning and management agency, granted special regulatory powers by state enabling legislation (Chapter 637, Acts of 1974, as amended). The special legislation gives the Commission power to designate Districts of Critical Planning Concern and to review Developments of Regional Impact, in addition to providing planning assistance to the six towns on the island of Martha's Vineyard.

The Martha's Vineyard Commission (MVC) is the only comprehensive regional land and water use governing body in Massachusetts. The twenty-one member Commission includes one representative of the board of selectmen from each Vineyard town, nine island representatives elected at large, one county commissioner, one cabinet member appointed by the Governor, and four persons appointed by the Governor, whose principal residence is not on the Vineyard and who do not have a vote on the Commission. The Secretary of Environmental Affairs is the voting cabinet official appointed by the Governor to sit on the Commission. The Commission is supported by a full-time executive director and a planning and legal staff. The Commission and staff are funded by the towns and several federal programs.

Chapter 637 allowed for the Martha's Vineyard Commission to assume some regulatory control already held by the six Vineyard communities. Chapter 637 did not address state authority such as the Wetlands Restriction Act, the Wetlands Protection Act, Chapter 91 Tidelands Program or Ocean Sanctuaries. The Commonwealth continues to administer state programs. Where an action is subject to the jurisdiction of both the Commission and the above state programs, the issuance of the needed state permit or license is required before the action can proceed.

Sections 9-13 of Chapter 637 govern the designations of Districts of Critical Planning Concern. The law requires that criteria and standards for determining critical planning areas and developments of regional impacts be developed by the Commission, and approved by the Secretary of Communities and Development of the Commonwealth of Massachusetts and by a state interagency review council. Representatives of the Massachusetts Office of State Planning, the Coastal Zone Management Office, the Department of Communities and Development, and the Executive Office of Manpower Affairs comprise the council. Massachusetts CZM representatives have taken part in the review of criteria.

The criteria and standards for the Critical Districts, which are similar to guidelines in Section 923.13 (a) (1)-(8) of the CZMA regulations, define the following Districts: Drinking Water Resource Districts; Fishing Resource Districts; Historic and Cultural Resource Districts; Economic and Development Resource Districts; Wildlife, Scientific and Ecological Resource Districts; Major Public Investment Districts; Hazardous Districts; and Farming Resource Districts.

The first District nominated, and of primary importance to Massachusetts Coastal Zone Management, is the Coastal Perimeter District which includes "the land, streams, and wetlands ... which lie below the ten foot elevation above mean sea level, or within five-hundred feet of mean high water exceeding ten acres in size, or the ocean ..." The goals of the Coastal Perimeter District are "to prevent flood damage, promote wildlife habitats, assure the maintenance of cultural and historic sites and values, preserve and enhance the character of views, prevent damage to structures on land and water as a result of erosion, promote economic development of fisheries and related industries, and maintain and enhance the overall economy of the Island."

Guidelines for activities in the Coastal Perimeter District have been promulgated in order to implement these goals. Local governments can permit activities in districts only if such activities meet the development guidelines established by the Commission.

In general, any town board, twenty-five taxpayers, or the Commission itself can nominate areas for designation. After the Commission holds a public hearing and approves the nomination, the Commission writes guidelines for critical area regulations. The town has one year to prepare local regulations consistent with the guidelines. The MVC works closely with communities in developing regulations. If the regulations are approved by the Commission, the town has all the permit granting powers within the District. The Commission will not exercise any control in an area of critical planning concern if the town develops acceptable regulations. If the town does not develop acceptable regulations, the Commission develops them and the town must accept the Commission's regulations.

Other classifications of critical planning districts aside from the Coastal Perimeter have been nominated and accepted by the Commission. Island roads to 200 feet from the right of way is one classification; special places such as historic and cultural areas, major hilltops and inland ponds comprise a second district; the third district involves the land around a great pond, Sengekontacket Pond.

In areas which are not critical area districts, the Commission has direct permitting authority over all activities which have a regional impact. Criteria for identifying and regulating developments of regional impact have been adopted by the Commission and approved by the state. Under the guidelines, the town boards responsible for granting local permits must refer to the Commission's standards and criteria when reviewing proposed developments. If the local board determines the proposed development is of regional impact, it must be referred to the Commission. If the Commission decides the probable benefits of the development outweigh the probable harm, the proposal is turned back to the town which may then issue or deny permits for the project. Although the town boards still retain permit-granting authority, the Commission may specify conditions for the developer to meet. In general, the criteria for determining developments of regional impact include developments within 500 feet of a town boundary, within 500 feet of mean high water, which propose to divide more than 30 acres into three or more lots, which are specifically requested to be designated as having regional impact and which are within a critical planning district. In addition, certain types of commercial, business, industrial, residential, transportation and public facilities developments are considered as having a regional impact.

Massachusetts CZM supports the regulation of coastal activities on Martha's Vineyard by the Commission, since the regulating guidelines have been approved by the state and conform to CZM concerns. Specifically, the Martha's Vineyard Commission is able to implement the "area of particular concern" and other "uses with direct and significant impact" aspects of Coastal Zone Management.

CZM will therefore contract with the Martha's Vineyard Commission for the performance of certain services. The Commission will identify and designate critical areas and determine priority uses for such areas, determine major activities that would have a direct and significant impact on coastal waters, and establish development guidelines for such activities; evaluate the potential impacts of developments on water quality and determine open space and recreation priorities.

The Martha's Vineyard Commission is a unique body with comprehensive land use authority and serves as a model for regional planning and implementation. Where CZM and Martha's Vineyard's Commission objectives are similar, CZM will financially support the implementation of parts of the CZM program through the Commission. This support will help insure the viability of the Commission, strong implementation of CZM policies, and reduce potential future conflicts between the state and Martha's Vineyard. (Copies of the Commission's regulatory guidelines and critical area designations are available from the Martha's Vineyard Commission.)

PART III: CONSISTENCY AND COORDINATION WITH FEDERAL  
AGENCIES IN MANAGING THE MASSACHUSETTS COASTAL ZONE

INTRODUCTION

The federal Coastal Zone Management Act directs that actions by federal agencies--federal licenses or permits; federal assistance; and activities and projects undertaken by the federal government--generally be consistent with approved state coastal zone management programs. In return for this substantial leverage that approved state programs will have over federal actions, the federal government naturally wishes to assure that states address legitimate national interests in the coastal zone. Specifically, the Act requires states to:

1. provide relevant federal agencies with an opportunity for full participation in program development;
2. demonstrate that the views of federal agencies primarily affected by the program have been adequately considered;
3. give adequate consideration to the national interest involved in the planning for and siting of facilities necessary to meet requirements which are other than local in nature;
4. assure that local land and water use regulations do not unreasonably restrict or exclude uses of regional benefit;
5. incorporate into the management program the requirements of the Federal Water Pollution Control Act, as amended, and the Clean Air Act, as amended; and
6. coordinate the coastal zone management program with relevant plans, many of which are guided and supported by relevant federal agencies.

In addition, the Act encourages states to participate with federal agencies in the mediation of serious disagreements should they arise.

Appendix C - Consultation with Federal Agencies - describes how CZM has fulfilled the first two requirements of the Act. The incorporation of Federal Water Pollution and Clean Air requirements is met by the definition of "permissible uses" found in Chapter II. (See also: Policy (34) supporting conformance to State and Federal requirements governing point sources of air and water pollution; Policy (3) for a description of CZM's interaction with water quality programs; and the description of air and water quality programs in Part II above). The sixth requirement, coordination with relevant plans, is addressed in Appendix D. The two sections below describe how CZM is meeting the

"national interest/uses of regional benefit" requirements and present the mechanisms for achieving federal consistency and mediating disagreements.

#### NATIONAL INTEREST AND USES OF REGIONAL BENEFIT

A number of federal agencies, both in responding to the Massachusetts Coastal Zone Management Preview and in earlier correspondence with CZM, have specifically cited certain kinds of facilities and activities as potentially being "in the national interest." The regulations promulgated by the Office of Coastal Zone Management pursuant to the Coastal Zone Management Act also list facilities in which there may be a clear national interest (15 CFR 923.15). These various expressions of national interest cover a wide spectrum of facilities and activities ranging from energy production to habitat protection. In many instances, the Massachusetts CZM program could not unilaterally accommodate one without prejudicially affecting another. The Massachusetts CZM program recognizes the national interest in the activities and facilities listed in the table below and neither arbitrarily excludes nor unreasonably restricts them. However, the policies of the Massachusetts CZM program, collectively, impose certain minimum conditions upon many of these "national interest" facilities and activities. These conditions are necessary to ensure both: (1) a balance among the varying and sometimes competing national needs; and (2) congruence with the Congressional finding that "there is a national interest in the effective management, beneficial use, protection, and development of the coastal zone" (Coastal Zone Management Act, Section 302 (A)). If, in the course of program implementation, a federal agency disputes the application of CZM policies as being contrary to national interests, the consultation and mediation procedures outlined in the federal consistency section below will be called into play.

The Massachusetts CZM program also recognizes that certain uses provide services or benefits to citizens of more than one municipality. In many cases such uses of regional benefit are national interest facilities as well. For such uses, the Commonwealth must be able to ensure that services or benefits destined for the citizenry at large are not unreasonably restricted or arbitrarily excluded by municipal land and water use regulations. The table below lists those facilities and activities which are potentially "in the national interest" or which are uses of regional benefit (the latter are shown with an asterisk (\*)). It also summarizes CZM policy conditions and pertinent implementation measures applying to such facilities and uses.

#### FEDERAL CONSISTENCY

Concern for the future of the Massachusetts coast is by no means peculiar to the Massachusetts community. Federal as well as state and local agencies help make the development and preservation decisions which ultimately impact our lands and waters. Because effective management of coastal resources demands a significant level of governmental



TABLE I

## NATIONAL INTEREST/USES OF REGIONAL BENEFIT SUMMARY

National Interest Facilities/ Uses of Regional Benefit	Summary of Most Applicable CZM Policy Conditions and Findings	Determination of Need/Implementation Authorities
<u>Energy Production and Transmission*</u> (energy storage and distribution facilities; refineries; nuclear, conventional, and hydroelectric power plants; deepwater ports)	<p>Meeting energy needs viewed as essential, but how these are met must be balanced against other national interest concerns. Give serious weight to siting power plants, storage facilities, and refineries inland; avoid siting in or damage to APR's. Siting of energy production, storage and transmission facilities to be consistent with Policy (1) - protection of salt marshes, dune areas, beaches, shellfish flats, salt ponds; evaluate risk to public safety at alternative locations prior to siting new LNG terminals; deepwater port, pipeline transmission lines, and off-shore mining and exploration of energy sources to minimize adverse effects on fisheries, wildlife, water quality, and recreational resources. Also, deepwater ports must demonstrate lower risk of both oil spills and overall damage to environment than alternatives; maximize use of existing marine terminals and ports.</p>	<p>Energy Facilities Siting Council (EFSC) determines "need" for facility, weighing economic costs, risk to environment, and adequacy of energy supply. Council takes into account agreements for interstate supply or purchase of energy. Determination of "national interest" thus based on considering all pertinent factors. EFSC authorized to override state and local regulations on siting of all energy facilities, except oil facilities (refinery, oil storage, and oil transmission). In case of oil facilities, EFSC cannot override local zoning in effect 1-2 years prior to construction of oil facility.</p>
<u>Recreation*</u> (National Seashores, parks, forests, large and outstanding beaches and recreational waterfronts; wildlife reserves)	<p>Recreation a high priority use for the coastal zone. Acquisition for coastal recreation from available acquisition funds given priority, especially for small scale sites. Recreational facilities are accorded preference: wharves on piling for marinas, boat launching ramps, beach replenishment and recreational pursuits exempted from provisos of Policy (1); ensure recreational facility siting and design avoids adverse transportation impacts on coastal communities. Avoid over-use of fragile coastal ecosystems in meeting public recreation needs. Major wildlife refuges nominated for designation as APR's. Minimize potential adverse impacts on public recreation sites from nearby development.</p>	<p>Specific recreation and wildlife refuge needs and priorities identified in regional chapter. Department of Environmental Management, Metropolitan District Commission and Public Access Board vested with powers of eminent domain to take lands and waters for public recreation purposes. Priorities for future coastal recreation acquisitions made in accordance with statewide comprehensive outdoor recreation plan. With respect to beach access, municipalities may not restrict non-resident use on beaches acquired or developed using state or federal funds. Also, the public has a reserved right to navigate, fish, and fowl below the high water mark on Massachusetts foreshores.</p>

National Interest Facilities/  
Uses of Regional Benefit

Interstate Transportation\*

(Interstate highways, airports, aids to navigation, ports and harbors, railroads)

Summary of Most Applicable CZM Policy  
Conditions and Findings

Port development and maritime shipping and industry accorded high priority and given preference in existing port areas. New port development outside of existing port areas discouraged, unless need is of national or statewide importance and cannot be met in existing port areas. Interstate highway and railroad corridors and new airport locations to be consistent with state's growth policy (see Policy 35). Transportation investments for port revitalization, access to coastal recreation and urban waterfront renewal supported. In addition to conformance with Policy (1), construction of highways, railroads, airports, are to minimize interference with water circulation and sediment transport, to preserve water quality and marine productivity, and to avoid obstruction of coastal views.

Production of Food and Fiber  
(prime agricultural land and facilities, forests; mariculture facilities, fisheries)

Mariculture and fisheries promoted through preservation of habitat (see below); priority for harbor improvements needed by fishing industry; e.g., state aid for pier construction, dredging, etc.; and given preference in allocation of port space. Massachusetts coastal zone does not host agricultural or forest lands of prime national importance.

Preservation of Life and  
Property

(flood and storm protection facilities; disaster warning facilities)

Determination of Need/Implementation Authorities

Need determined by relevant federal agencies working with counterpart state and local agencies; but the way need is to be met must be consistent with CZM policy. Massachusetts Department of Public Works exercises power of eminent domain for highway rights-of-way. MASSPORT Authority exempt from local zoning; other port authorities and local airport commissions subject to local as well as state regulations. As guardian of public's right in tidelands, Division of Waterways may deny tidelands permit for development in port areas that is inconsistent with CZM policy.

Fishing industry needs with respect to harbor improvements and fisheries habitat protection identified in Regional Chapter.

Regional chapters inventory needs for structural measures.

National Interest Facilities/ Uses of Regional Benefit	Summary of Most Applicable CZM Policy Conditions and Findings	Determination of Need/Implementation Authorities
<u>National Defense and Aerospace</u> (military installations; defense manufacturing facilities; aerospace launching and trading facilities)	Marine Environment, Coastal Hazards, Visual Environment, Ports and Harbors, Recreation, and General Development and Public Investment policies all potentially apply. However, in instances where national security concerns deemed paramount by cognizant federal agency, mediation procedures detailed in Federal Consistency Section can be invoked.	Existing federal lands and defense installations shown on maps in regional chapters. These subject to specified policies if spill-over effects occur in the coastal zone.
<u>Historic, Cultural, Aesthetic, and Conservation Values</u> (historic sites; natural areas; areas of unique cultural significance, wildlife refuges; areas of species and habitat preservation)	Salt marshes, dune areas, beaches, shellfish flats, salt ponds protected by Policy (1). Also, further protection afforded APR's. These measures encompass the most salient coastal natural areas and areas of fisheries and wildlife habitat. APR's also include areas of historic sites and areas of unique cultural features. Additionally, public supported projects are expected to conform to visual environment policies. State and federal actions are to respect the preservation intent of lawfully designated historic districts or sites.	These areas mapped and described in regional chapters.
<u>Mineral Resources</u> (oil and gas wells; mineral extraction facilities needed to directly support activity)	Off-shore mining permitted except in legislatively designated ocean sanctuaries and by other conditions listed in Policy (33). Also see description under <u>Energy Production</u> and <u>Interstate Transportation</u> above.	Off-shore mining in coastal waters licensed by Division of Mineral Resources.
<u>Public Health Facilities*</u> (municipal sewage treatment plants, solid waste disposal facilities, public water supply)	Improvement of water quality, provision of public water supply, and solid waste disposal facilities all in public interest, but how these needs met must be consistent with national interest concerns and careful management of coastal zone. In addition to provisos of Policy (1), treatment plant outfalls prohibited in salt ponds, discouraged in APR's, and restricted by other conditions listed in Policy (3).	When necessary to ensure municipal conformance to state and federal water quality standards, Division of Water Pollution Control (DWPC) authorized (MGLA Ch. 21, S. 28) to mandate creation of water pollution abatement district, which district required to plan for water pollution abatement. In event plans inadequate, DWPC authorized to act on

National Interest Facilities/  
Uses of Regional Benefit

Public Health Facilities (Cont.)

Summary of Most Applicable CZM Policy  
Conditions and Findings

Municipal sewage treatment plants, water supply, and solid waste facility siting, capacity, and design to be governed by state's growth policy (see Policy 35). Ensure such facilities do not promote growth in damage prone areas or degrade natural buffers. As publicly supported projects these facilities expected to conform to Visual Environment policies. Ensure water supply impoundments do not adversely effect quality and quantity of fresh water inflow into coastal waters or increase run-off, erosion, or turbidity problems harmful to marine life or recreational pursuits.

Determination of Need/Implementation Authorities

behalf of District to prepare necessary engineering plans and to order municipality or District to construct treatment facilities (MGLA Ch. 21, SS. 33B-33D). Massachusetts Legislature may by special act establish regional water supply district which is empowered to take lands and waters by eminent domain for public water supply. When necessary in interests of public health to provide for suitable sites for solid wastes disposals, Department of Environmental Quality Engineering (DEQE) authorized (MGLA Ch. 111, S. 150A) to assign a site for placement of state solid waste facility (sanitary landfill, refuse transfer station, refuse incinerator, refuse composting plant, or dumping ground for refuse).

\* Indicates "use of regional benefit"

Note: Only the principal policy conditions, findings, and implementation measures have been summarized. The reader should refer to the Coastal Policies Section and Appendix E for a full text of pertinent policies and implementation measures.

coordination as well as a focus of control, the Coastal Zone Management Act provides that:

"Each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in manner which is, to the maximum extent practicable, consistent with approved state management programs."

Requirements within the Act which define the federal/state relationship are referred to as the federal consistency provisions. Under these provisions, the Massachusetts Coastal Zone Management Program has been authorized to work with federal agencies to delineate how federal activities must proceed to realize state CZM program requirements. The CZM policies of Chapter III are the principal measures against which federal activities will be judged for consistency; however, where pertinent to elucidating the intent of CZM policies, the plan's text and Regional Chapter will also be used.

Covered by the Act's federal consistency provision are:

- (1) Federal licenses and permits, including those issued in conjunction with Outer Continental Shelf exploration and development;
- (2) Federal assistance to state and local governments or any entity related thereto, through grant or contractual arrangements, loans, guarantees, or insurance; and
- (3) Federally conducted or supported activity directly affecting the coastal zone, including any development project involving a building or other structure or the alterations of terrain or a body of water, conducted by or on behalf of the federal government.

The enforceable policies to which Federal consistency applies are: Policies 1, 2, 3, 4, 5, 6, 8 (a-c), 9, 12, 14, 17, 18, 27, 33, 34 and 35.

#### FEDERAL LICENSES OR PERMITS

Currently, applicants for federal licenses or permits must, in most instances, obtain local and state permits before a federal agency will begin processing federal permit applications. When both a federal and state license and permit are required, state and federal agencies frequently issue separate public notices, hold separate public hearings, and conduct separate site investigations, analyses, and consultations with the applicant. As a result, applicants experience lengthy delays in receiving governmental approval for projects.

In addition, local and state agencies sometimes do not possess jurisdiction over certain kinds of activities, but federal agencies through their permits or licenses do. On such occasion, local and state agencies have no effective way of influencing the federal decision.

CZM, by using the federal consistency provisions of the Coastal Zone Management Act, will strive to bring a measure of relief to these

Vol I p. 351, line 1 revise sentence to read:

"When both EOEAs and federal permits and licenses are required, CZM will work to develop agreements with federal agencies so that:"

EOEA and federal agencies begin their permit or license applications concurrently. Rather than having the federal agency delay processing until EOEAs permit actions are completed, this arrangement would allow federal agencies to take at least the first steps in reviewing applications (e.g., ensuring that permit forms are appropriately completed and all pertinent information supplied, and, if necessary, preliminary site inspections conducted). Thus, when the required state license or permit and the certification statement that the proposed activities comply with the CZM program are approved, the federal agency can move forward in processing the application for a federal license or permit without having to use additional time on preliminary processing steps.

A joint public notice is issued and, when possible, joint public hearings held. This step would avoid delays incurred because of separate and differently timed hearings.

Informal consultations are held with the applicant and all pertinent state and federal agencies to ensure that misunderstandings as to facts, as well as permit or license requirements and scheduling are understood by all parties, and that all feasible steps to expedite application processing are taken.

In cases where state and federal permit or licensing jurisdiction is not the same, CZM will use federal consistency to assure that federal permits or licenses are issued in accordance with the CZM program. CZM will work with federal agencies to define more precisely how CZM policies will apply to application for such federal licenses or permits.

The table below lists the federal licenses or permits to which CZM will apply the consistency provisions, identifies the requirements of CZM policies which will be used to determine consistency, and identifies whether the jurisdiction of the federal permit or license is similar to that of EOEAs.

Under the terms of the Coastal Zone Management Act, applicants for federal permits or licenses for activities affecting land and water uses in the coastal zone are to furnish a certification that the proposed activity complies with the state's approved CZM program. Such certifications will be required for federally licensed or permitted projects occurring in the coastal zone, in or on Massachusetts rivers directly discharging into coastal waters, and in ocean waters bordering the Massachusetts coastal zone. These requirements also apply to federal permits and licenses for activities described in detail in plans submitted to the Secretary of Interior for exploration or development of OCS land. CZM review for consistency is to be based on this certification statement. As required, CZM will give public notice of the

TABLE II

SUMMARY OF FEDERAL CONSISTENCY AND FEDERAL LICENSES AND PERMITSSCOPE OF STATE AND FEDERAL  
REGULATORY JURISDICTIONCZM POLICY REQUIREMENTSFEDERAL LICENSES OR PERMITSU.S. Army Corps of Engineers

Section 404, Federal Water Pollution Control Act, permit for discharge of dredged or fill materials in navigable waters.

When salt marshes, shellfish beds, dunes, beaches, barrier beaches, and salt ponds restricted under the Coastal Wetlands Restriction Act, prohibit all dredging, filling, construction and discharge of pollutants except: construction of piers on pilings, catwalks, bathhouses, boat channels for single family use, maintenance dredging, expansion dredging in port areas, expansion of existing harbor channels where necessary and impacts on shellfish beds are minimized, beach replenishment, boat launching ramps, utility lines, driveways, maintenance or reconstruction of existing roads, and shoreline protection works. In unrestricted wetlands, condition alterations and construction so as to protect the seven interests of the Wetlands Protection Act. (Policy 1) Prohibit mining, dumping, and permanent structures on seabed as required by Ocean Sanctuaries Acts; condition other mining or open ocean construction works to minimize adverse effects on water quality, recreational beaches, fish and wildlife (Policies 6 and 13). Condition construction of solid fill piers, bulkheads, shoreline protection works, and other works in coastal waters so as to prevent disruption of circulation patterns, minimize adverse effects on littoral processes and flushing rates, and allow for anadromous fish passage (Policies 4, 8, and 12). Condition location and treatment of discharges so as to minimize impacts on water quality, shellfish, and recreation (Policy 3). Restrict new shipping channel development of 20 foot depth or more in non-designated ports (Policy 18). Prohibit pre-emptions of present and proposed maritime-dependent industrial uses in designated ports (Policy 17). So as to minimize adverse effects on marine productivity, condition dredging with respect to time and method and dredge spoil disposal with respect to locations and type of spoil (Policy 5). Prohibit dredge spoil disposal in areas for preservation or restoration and prevent damage to characteristics cited in designation of areas for preservation or restoration (Policy 2).

Similar to Waterways Program (MGLA, Ch. 91) and Wetlands Program (MGLA, Ch. 131, S. 40) however, scope of federal review may include economic and broad land use considerations including aesthetics and public interest in activity. Thus, when EOE permits scope of jurisdiction insufficient to implement CZM policy, federal consistency will be relied upon to ensure compliance with CZM program.

SCOPE OF STATE AND FEDERAL  
REGULATORY JURISDICTION

CZM POLICY REQUIREMENTS

FEDERAL LICENSES OR PERMITS

U.S. Army Corps of Engineers (cont.)

Section 10, River and Harbor Act of 1899, permit for obstruction of alteration in navigable waters of the United States.

Section 103, Marine Protection, Research, and Sanctuaries Act, permit for transportation of dredged material.

Section 4f, OCS Lands Act, permit for artificial islands or fixed structure on outer continental shelf.

U.S. Coast Guard

Permit for construction or modifications of bridge structures across navigable waters of the United States.

-- same as above --

For dredging, filling and construction and discharge of pollutants into saltmarshes, beaches, shellfish beds, dunes, and barrier beaches, see above summary of Policy 1. Prohibit dredge spoil disposal in Areas for Preservation or Restoration (Policy 2). Condition dredge spoil disposal with respect to location and type of spoil (Policy 5).

Condition mining or construction works in the open ocean so as to minimize to the extent practicable, adverse effects on water quality, recreational beaches, fish and wildlife (Policy 33).

For dredging, filling, construction and discharge of pollutants in salt marshes, beaches, shellfish beds, dunes and barrier beaches, see above summary of Policy 1. Prevent damage to characteristics cited in designation of areas for preservation or restoration (Policy 2). Condition construction of solid fill piers, bulkheads, and other works in coastal waters so as to prevent disruption, of circulation patterns, minimize adverse effects on littoral processes and flushing rates, and allow for anadromous fish passage (Policy 4). Prohibit pre-emptions of present and proposed maritime-dependent industrial uses in designated ports (Policy 17).

-- same as above --

State lacks jurisdiction beyond three-mile limit of coastal waters, but permit applications will be reviewed to ensure consistency with CZM policies, especially with respect to spillover effects on the coastal zone.

-- same as above --

Federal jurisdiction concurrent with that of Waterways Program (MGLA, Chapter 91).



FEDERAL LICENSES OR PERMITS

Deepwater Port License

Energy Facilities Siting Council (EFSC) to consider alternative coastal sites and assess need, impact on port operations, changes in environmental impacts over existing oil delivery systems, and other factors. Based on considerations of these alternatives and assessments and the balancing of supplying energy needs, protection of the environment, and lowest cost to the consumer, the EFSC will approve, deny, or condition deepwater ports in the coastal waters of Massachusetts.

Deepwater Port Act explicitly gives authority to approved CZM program and Governor of contiguous state to approve or deny Deepwater Port license.

Environmental Protection Agency

National Pollution Discharge Elimination System (NPDES) permit.

For dredging, filling, construction, and discharge of pollutants in salt marshes, beaches, shellfish beds, dunes, and barrier beaches, see above summary of Policy 1. Prohibit dredge spoil disposal, siting of new sewerage treatment facilities, and new industrial discharges in Areas for Preservation or Restoration (Policy 2). Condition the location and treatment of discharges so as to minimize adverse effects on water quality, shellfish, and recreation (Policy 3). Prohibit pre-emption of present or proposed maritime-dependent industrial uses in ports (Policy 17). Ensure consistency with Area-wide Wastewater Management (208) Plans (Policy 35).

EPA and the Massachusetts Division of Water Pollution Control share responsibility for issuance of this permit. Federal Consistency will be used to ensure that EPA's responsibility for NPDES permits are consistent with CZM policies.

Ocean Dumping permit (authority exercised jointly with Army Corps of Engineers).

--see Army Corps of Engineers Section 103 permit above--

State lacks jurisdiction beyond three mile limit of coastal waters but permit applications will be reviewed to ensure consistency with CZM policies.

Department of Interior

Permits for Pipeline Rights of Way for oil or gas transmission on Outer Continental Shelf.

Condition off-shore energy resource extraction or development and construction of related off-shore facilities so as to minimize adverse impacts on the marine environment, especially with respect to fisheries, water quality, fisheries, and wildlife (Policy 33).

-- same as above --

SCOPE OF STATE AND FEDERAL REGULATORY JURISDICTION

CZM POLICY REQUIREMENTS

"Federal Energy Regulatory Commission, DOE," all other references to "FPC" should read "FERC".

SCOPE OF STATE AND FEDERAL  
REGULATORY JURISDICTION

-----see above

-----see above

FPC jurisdiction similar to that of Energy Facility Siting Council, except that expressively mandated to for water power project the conservation and management of land and water associated natural resources at the project, such as wildlife and outdoor recreation and the preservation of historic, scenic and aesthetic values of project areas. Applicant's Consistency Statement will be approved, if it abides by revised EFSC regulation

Energy Facility Siting (EFSC) also has jurisdiction over gas facilities, and consistency statement will be approved if it abides by revised EFSC regulation

CZM POLICY REQUIREMENTS

-----see above

-----see above

Ultimate state approval for siting of major energy facilities rests with the Energy Facility Siting Council (EFSC). The Council has agreed to consider the CZM program as an expression of state environmental policy. The EFSC also agreed to incorporate into its own regulations a requirement that utilities provide to the Council alternative coastal sites, and in the case of non-coastal dependent energy facilities an alternative inland site. Additional assessment factors will also be incorporated into EFSC regulations. If an applicant for an FPC or NRC permit or license gains EFSC approval it will be deemed consistent with the CZM program. Other federal permits or licenses for construction of an energy facility will be deemed consistent with the CZM program if they meet pertinent CZM policy requirements or if the EFSC overrides the condition or denial of a counterpart state permit by issuing a Certificate of Environmental Impact and Public Need. (see policies 27-33 for further details).

-----see above

FEDERAL LICENSES OR PERMITS

Permits and licenses for activities described in detail in plans submitted to the Secretary of Interior for exploration and development of OCS lands.

Permit for approval of platform installations.

Federal Power Commission

Permits and licenses for planning, construction, and operation of non-federal hydroelectric power developments.

Certificates authorizing natural gas pipelines to construct, extend, acquire or operate transportation and storage facilities for transport of natural gas in interstate commerce.

FEDERAL LICENSES OR PERMITS

Authorization for import or export of natural gas.

Nuclear Regulatory Commission

License for construction and operation of nuclear power plant.

CZM POLICY REQUIREMENTS

-----see above-----

-----see above-----

SCOPE OF STATE AND FEDERAL REGULATORY JURISDICTION

Energy Facilities Siting Council (EFSC) also has jurisdiction over gas facilities, applicant's consistency statement will be approved if it abides by revised EFSC regulations.

Energy Facility Siting Council (EFSC) has jurisdiction over power plant siting, applicant's consistency statement will be approved if it abides by revised EFSC regulations.

applicant's consistency statement either by joint issuance of a public notice with the federal licensing or permitting authority or publication in the Monitor (the bulletin published by the Executive Office of Environmental Affairs providing public notification of actions under the Massachusetts Environmental Policy Act). CZM, through informal consultations with the applicants, will assist in preparation of the certification statement. (For a more detailed description of the process to be used, see the Secretary's Regulation, Appendix A). If CZM objects to the certification statement on the grounds that the issuance of the requested federal license or permit would be inconsistent with the approved CZM program, the federal agency may not issue the license or permit. The applicant may appeal the negative decision to the Secretary of Commerce, or the Secretary may initiate review. The Secretary of Commerce may overturn the CZM decision if he finds the proposed activity is consistent with the objectives of the Coastal Zone Management Act or is otherwise necessary in the interest of national security.<sup>4</sup>

#### DIRECT FEDERAL ACTIVITIES INCLUDING DEVELOPMENT PROJECTS

Federal agencies are responsible for determining whether federal activities (including development projects undertaken by or on behalf of a federal agency) directly affect the coastal zone and are consistent to the maximum extent practicable with the CZM program. Federal agencies must notify CZM of their consistency determinations. If CZM disagrees with the federal agency consistency determination, resolution may be sought through negotiations, beginning with informal consultations, and if agreement cannot be resolved, possible mediation attempts by the Secretary of Commerce in cooperation with the Executive Office of the President. The state may also reserve the right to seek judicial resolution of disagreements, if appropriate and necessary.

CZM will review for consistency with all CZM policies federal activities directly affecting the coastal zone, such as:

##### Army Corps of Engineers

--proposed project authorization for dredging, channel works, breakwaters, other navigation works, erosion control structures, beach replenishment and dams within the coastal zone and on or in rivers directly discharging into coastal waters.

--proposed acquisitions within the coastal zone.

<sup>4</sup> Note the descriptions of how the federal consistency provisions apply is a summary of the most salient requirements. For further detail, the reader is referred to the federal regulations on federal consistency: 15 CFR 930.

Department of Interior:

- proposed Bureau of Land Management OCS lease sales.
- proposed National Park Service acquisitions within the coastal zone,
- proposed U.S. Fisheries and Wildlife acquisitions within the coastal zone.

Department of Defense:

- location and design of new or enlarged defense installations within the coastal zone.

Department of Transportation:

- location and design of new or enlarged Coast Guard stations, bases and lighthouses within the coastal zone.
- location and design of aviation communication and air navigation facilities within the coastal zone.

General Services Administration:

- location and design of proposed federal government property acquisition and building construction within the coastal zone.
- disposal of surplus federal lands within the coastal zone.

Amtrak, Conrail:

- railroad expansions, new construction, or abandonments within or affecting the coastal zone.

CZM will work with federal agencies to develop agreements specifying the kinds of direct federal activities that will require CZM review.

FEDERAL ASSISTANCE PROGRAMS TO STATE AND LOCAL GOVERNMENTS

As mentioned in Part IV below, CZM will be working with coastal communities and federal funding agencies to assure that projects and programs meeting the policies of the CZM program are given priority consideration for federal funding. Occasionally, however, some applications for federal assistance will contravene CZM policies; for example, federally subsidized housing to be located in a salt marsh, assistance to dredge new deepwater channels outside existing port areas, construction of municipal sewage treatment facilities and outfalls in APR's. In these instances, CZM will deem the application for federal assistance as inconsistent with CZM policies. The federal assistance programs and the policies to be applied to them are mostly described under implementation measures following each policy in Chapter III.

The Intergovernmental Coordination Act of 1968 established state and regional clearinghouses to review applications for federal funding. In Massachusetts, the state clearinghouse is the Office of State Planning, and the regional clearinghouses are the regional planning agencies. The review procedure is known as A-95 and is aimed at ensuring that federal agencies are made aware of state, regional, and local concerns about the application's compatibility with other state or federal programs. CZM's review for consistency of applications for federal assistance for projects within the coastal zone will occur upon CZM's receipt of the A-95 notification and application from the Office of State Planning. Moreover, in order to expedite processing and avoid needless paperwork, CZM will examine with federal agencies the feasibility of establishing consultation procedures to precede formal A-95 reviews.

If CZM determines the application to be inconsistent with CZM policies, the applicant agency or federal funding agency may appeal the CZM decision to the U.S. Secretary of Commerce. The Secretary of Commerce may override the CZM determination, if he finds the proposal is consistent with the purposes of the Coastal Zone Management Act or necessary in the interest of national security.

#### PART IV: TECHNICAL ASSISTANCE/PROGRAM INCENTIVES

A major component of Coastal Zone Management Program will be technical assistance. Technical assistance will aid and guide projects which promote the goals and objectives of this program. There are five categories of technical assistance available to communities within the Coastal Zone. They are:

1. Grants
2. Handbooks
3. Staff Assistance
4. On-going Research
5. Energy Impact Funding

##### 1. GRANTS

Massachusetts will receive a substantial federal grant to cover the administrative costs of implementing the Massachusetts Coastal Zone Management Plan. A portion of this grant will be set aside to fund action studies aimed at developing innovative solutions to pressing coastal problems and needs.

The intent of such financing is to enable communities to undertake the studies and preparatory work that are necessary before major project development proposals can be put together. Municipalities will be invited to submit funding proposals to the Boston Coastal Zone Management Office on an annual or semi-annual basis. Projects eligible for funding include:

waterfront renewal and development studies: preparing harborfront plans aimed at improving visual and physical access to waterfronts; identifying opportunities for waterfront parks; waterfront pedestrian ways, ramps, and other public access improvements; conducting feasibility, cost, and preliminary engineering studies for such waterfront improvement projects.

port and harbor development projects: preparing overall port and harbor development plans; assessing future facility needs and the economic return from such facilities; conducting feasibility and preliminary engineering studies for public marinas, town wharfs, and docks, access ramps, and navigational improvements.

dredge spoil disposal investigations: identifying feasible land alternatives and sites for dredge spoil disposal; investigating costs; and preliminary engineering for innovative dredge spoil disposal practices including creating artificial salt marshes, using spoil as fill, and building containerized sites.

The maximum sum to be awarded for any one proposal cannot exceed \$20,000. The minimum sum is \$1,000. The maximum time period for any funded project will be one year. Priority will be given to those proposed projects which satisfy the following criteria:

1. The project will help accomplish the goals and objectives outlined within the CZM policies.
2. The site is located within an identified Special Assistance Development Area (see regional chapters).
3. The city or town can provide at least one third of the project cost.
4. The proposal demonstrates that funding is not available from any other federal or state agency.
5. The proposed project carries assurances that the study will lead to concrete project development plans which can be implemented.

Funding requests will be weighed against one another, and those which demonstrate a pressing need and which best meet the policies and objectives of the CZM Plan will be selected for funding.

## 2. HANDBOOKS

Handbooks will be prepared by CZM and other state agencies to help cities and towns carry out CZM policies. These booklets will cover such topics as zoning for coastal zone communities, prototypical development standards, erosion control practices, and development guidelines for expanding commercial fishing facilities. The preparation of these handbooks is in response to needs expressed by citizens at public meetings and by the Citizen Advisory Committees during the formulation of the management plan. They will be prepared during the first year of implementation and made available to the town selectmen, planning boards, conservation commissions, and other appropriate committees upon request. (Cities and towns will be notified as the handbooks are completed.)



### 3. STAFF ASSISTANCE

Scientific, environmental, planning, and legal expertise will be available to cities and towns to aid them in investigating site specific problems. This assistance will be coordinated by CZM and will involve its own staff time as well as assistance from other state agencies. Technical assistance expertise will be directed towards small scale problems that can be studied and analyzed in a relatively short period of time. Problems falling under the following categories will be eligible for assistance:

- a. erosion
- b. finfish and shellfish management (coordinated with Division of Marine Fisheries)
- c. recreational facility siting (coordinated with DEM and MDC)
- d. public access (coordinated with Conservation Services, Fisheries and Wildlife, and DEM)
- e. coastal wetland management (DEM, DEQE)
- f. coastal land use planning problems (DCA, RPA's)
- g. scenic river designation (coordinated with DEM, etc.)
- h. water quality (coordinated with DEQE)

Many times the recommendations resulting from these investigations will require the town or city to seek outside funding sources. In these cases as well as when state and federal funding is needed for other coastally related projects, CZM will do the following:

1. Help communities identify potential sources of funding for programs and projects meeting the policies and objectives of the plan.
2. Champion such projects and programs before federal and state agencies to assure that they are given priority consideration for funding.
3. Work to ensure that eligibility requirements and funding levels set by federal and state agencies reflect the needs of coastal communities, inland users, and the priorities of the CZM plan.

Communities that would like to receive Staff Assistance either for problem investigations or to aid them in securing funding should contact CZM through their selectmen, planning boards, or conservation commission. Staff Assistance will be given on a first come first serve basis

for those projects that are related to the policies set forth in the coastal zone management plan. However, if the office is inundated with such requests, those projects which best meet the policies and objectives of the CZM plan will be responded to first.

#### 4. ON-GOING RESEARCH

Many policies set forth in the CZM plan can only be assured of implementation after further research is done. For example, environmentally sound dredging can be accomplished only after suitable dredge spoil sites have been identified. For problems such as these, CZM will carry on research in-house, through other state agencies or through private consultants to develop sound coastal zone management practices that will aid the communities throughout the coastal zone. Such research will give the state a continuing opportunity to contribute innovative management techniques to coastally related problems. A list of on-going projects will be published semi-annually in the Coastal Zone Management Newsletter and this newsletter will also carry summaries of findings. More detailed reports will be made available to towns upon request.

#### 5. ENERGY IMPACT FUNDING

The 1976 amendments to the Coastal Zone Management Act establish a new federal loan and grant program to assist coastal communities and states to shoulder the financial costs incurred by accommodating coastal energy facilities. Under this new program, coastal communities hosting new coastal energy facilities will be eligible to receive:

1. loans and loan guarantees to help cover the costs of both providing additional public services and constructing new public facilities (roads, water supply, sewage treatment works) made necessary by new coastal energy facilities;
2. refinancing and other financial assistance, including grants in extreme cases of hardship, to repay the above loans if the financial burden imposed on a community accommodating new coastal energy facilities is so severe as to cause substantial hardship; and
3. grants covering the full costs of environmental losses and damages sustained by the siting of a coastal energy facility.

This new program of federal assistance is only made available once the U.S. Secretary of Commerce either approves a state's coastal zone management program or determines that substantial progress has been made to meet the planning and program approval requirements of the Coastal Zone Management Act.

The Massachusetts Coastal Zone Management Program will help affected coastal communities take advantage of this new program and will facilitate approval of eligible applications by establishing a continuing working relationship with the U.S. Department of Commerce.

#### PART FIVE: CONTINUING PUBLIC INVOLVEMENT IN IMPLEMENTING THE CZM PLAN

The CZM plan represents significant contributions of time, interest and expertise on the part of many Massachusetts citizens. Citizens improved the data base, verified CZM information, evaluated various alternatives, and expressed the values and concerns of their region. There will be a need to continue public involvement in the management phase of Massachusetts CZM to meet many of these same functions.

#### CITIZEN ADVISORY COUNCILS

To meet this need, CZM will establish CZM Advisory Councils for each coastal region. These regional Councils will be a natural evolution of the existing CZM Citizen Advisory Committees. The tasks of the Councils will include:

1. Annual Review: The regional Councils will annually review and report to CZM on the applicability of the respective regional chapter, and up-date where necessary.
2. Quality Control: The regional Councils will help to insure overall quality control in the CZM program. The Councils will review on a periodic basis the state's regulatory and management programs as they relate to their respective region, for quality and consistency with the CZM plan.
3. Observation: The regional Councils will serve as local contacts within the region, alerting the regional environmental engineer and state CZM administrator of problems and issues in the region.
4. Priority Setting: The regional Councils will advise in the setting of priorities in the allocation of technical-assistance funding for the region, should requests for funds exceed available supplies.
5. Conflict Resolution: The regional Councils will serve as a forum for discussion and a central point for the collection of information and ideas, should problems or conflicts occur between communities.
6. Monitoring: The regional Councils will monitor the coordination of activities by local, state and federal government programs in the coastal zone.

Council membership will include a formal representative of each city or town in the region, as well as representatives of the major users-interests in the region.

#### STATEWIDE ADVISORY GROUP

There will also be a statewide advisory group to assist the CZM director and the Secretary of Environmental Affairs. This group will evolve from the current Governor's Task Force on Coastal Resources, and will represent a statewide constituency. Membership will consist of inland and coastal representatives. Unlike the regional Councils, this group may not be geographically representative, but will include at a minimum representatives of commerce, business and utilities; universities; state, federal and local governments; regional groups; recreation interests; planners; the legislature; sportsmen groups; commercial fishermen; cabinet secretaries; conservation and civic interests; educational groups; CZM regional Councils; and interested citizens.

This statewide group will have a mix of functions:

1. Advisory and Planning: This group will advise the director of the CZM program and the Secretary of Environmental Affairs on the implementation of the CZM program. As planning will continue on erosion problems, recreation, and various aspects of outer continental shelf oil and gas exploration and development, this group will help to evolve state planning efforts.
2. Quality Control: This group will work with the CZM director on a periodic review of environmental regulatory and management functions to insure adequacy and consistency in the application of CZM policies.
3. Priority Setting: This group will advise the CZM director and the Secretary of Environment affairs on the setting of priorities for CZM funding to local and state agencies, and for overall program objectives and goals.
4. Education: This group will work to ensure development of long term education programs to foster a state coastal ethic.
5. Management: This group will review the CZM program on an on-going basis, and recommend changes to the Secretary of Environmental Affairs. This group will advise the Secretary on questions of amendments to the CZM program.
6. Review: This group will perform for the Secretary an annual independent review of the CZM program.

## PUBLIC NOTICE OF STATE ACTIONS

Adequate public notice becomes essential for public participation. The commitment to public notice runs consistently through the plan, through the federal coastal zone management act, through existing state laws, and through the regulations which the Secretary and agencies will promulgate to implement the CZM program.

A key mechanism in this regard is the Monitor. This publication was created to provide public notice of the projects which come under the Massachusetts Environmental Policy Act and is distributed free of charge to all conservation commissions and interested citizens. The CZM Program will expand its distribution and scope within the coastal zone. It will be sent to all planning boards and boards of selectmen in addition to the conservation commissions and interested citizens. It will cover not only actions taken under the MEPA review but also notice of hearings when the Secretary is considering designating a critical area of environmental concern, notice of hearings by the Department of Environmental Management concerning restriction orders under the coastal wetlands restriction program, notice of conflicts brought to the Secretary about the consistency of a permit decision with the CZM plan, notice of all certification statements received pursuant to the federal consistency procedures, notice of all wetlands appeals pending before the Commissioner of Environmental Quality Engineering, notice of proposed land acquisitions by EOEAs, and others. Some of the proceedings just described, or some others (listed in Section 7.94 of the Secretary's regulations) also have other statutory notice requirements. These requirements will continue to be met. The purpose of the Monitor is to provide people with a single publication that will contain notice of all major CZM-related actions without needing to subscribe to the local and Boston papers, visit local town halls, neighboring town halls, regional offices, and Boston offices of state agencies.

## OTHER CITIZEN ACTIONS

Depending upon the nature of the state action there are many options open to citizens interested in making their views known. If the Monitor contains a notice about the availability of an environmental impact report, the citizen can ask for a copy and can comment upon the findings in the report. If it contains notice of a hearing to be held by the Secretary of Environmental Affairs concerning designating an area of critical environmental concern, one can submit written comments or appear at the hearing. If the matter is an applicant's Certification Statement for consistency of his project with the CZM Plan, a concerned citizen could contact CZM directly or go through the local citizens advisory group to comment on the statement. Under Chapter 30A, Section 10A of the state administrative procedures act, any ten citizens can intervene in any adjudicatory proceeding conducted by a state agency in order to determine whether or not there might be damage to the environment. Finally, if citizens are not satisfied with any of the adminis-

trative avenues open to them for influencing state actions, any ten citizens can sue in the superior courts concerning any damage to the environment, pursuant to Chapter 214, Section 7A of the General Laws.

Through the citizen advisory process, we have learned that people are very concerned about the issue of state acquisition of lands. Some people want the CZM program to purchase extensive amounts of beach area; others do not want any new public beaches created in their town. Because acquisition is such a controversial issue, the CZM program feels that the process should be as visible as possible to all Massachusetts citizens.

Acquisition is a major implementation tool for the recreation policies (specifically Policies 22, 25, and 26). Authority for such acquisition stems from the Public Access Board (MGLA Chapter 21, Section 17, 17A) which may designate an area for public access and may then proceed to acquire the entire tract, easements or other interests. No designations may occur without a public hearing; notice of all such hearings held in the coastal zone will now appear in the Monitor. Under Chapter 132A, Section 33A, the Commissioner of DEM may take by eminent domain fee and less than fee interests outside of the metropolitan district for conservation or recreation purposes. These eminent domain powers may not be exercised without the approval of the local board of selectmen, although approval is presumed if no action is taken by the board within thirty days. Within the metropolitan parks district, the MDC (Chapter 92, Section 79) has eminent domain authority to acquire land and other interests for reservations. Such actions cannot be taken without the approval of the local board of parks commissioners.

Other policies of the Plan are peripherally related to acquisition. Policy 15 calls for the acquisition of visual easements in urban areas in conjunction with recreation programs; the authorities noted above are applicable to this policy as well. Policies 19 and 21 address the expansion of ports and harbors and urban waterfront development. Chapter 91, Sections 5, 9A, 11, and 31, give the DEQE the authority to acquire waterfront lands and facilities. The procedures under these statutes vary; some require public hearings, approval of the Governor, or consultation with MASSPORT. Policy 12 calls for the use of structural solutions for flood control problems only when non-structural solutions, including acquisition, are infeasible. If acquisition as a flood control measure is proposed, the Water Resources Commission is empowered, under Chapter 21, Section 9, 9A, to acquire water impoundment sites and take structural or non-structural measures for the purposes of flood prevention. No actions can be taken without the approval of the local board of selectmen or city council. Policies 2 and 10 simply address the priorities to be assigned to the use of acquisition monies--giving high priority to acquiring flood and erosion-prone areas when using recreation funds and giving high priority to acquiring land in APR's when using any sort of public monies. Notices of any of the

actions listed above will henceforth appear in the Monitor in order to ensure a uniform means of notice for all EOEAs in the coastal zone.<sup>5</sup>

#### LOCAL GOVERNMENT INVOLVEMENT

It is a CZM goal to help state and local decision-making support one another. Many municipalities have areas zoned for water-dependent uses, for commercial and industrial use, or for conservation open space. While no project could come to the state without having received all prerequisite local approvals, the intention of the management system is to expedite the state permit process and to reinforce local zoning policies when that development is consistent with the CZM plan.

The 1976 amendments to the Coastal Zone Management Act also seek to improve local and state coordination. Congress foresaw problems in those coastal states which are empowered to override local zoning decisions or to prepare zoning plans for local communities. Thus, the amendments require a thirty-day comment period by local governments before the state may proceed with a management program decision. But, since the Massachusetts management system, unlike other states, will not be able to dictate to local governments, no project seeking a state permit could come to any EOEAs agency without having first been approved at the local level.

Under the terms of the federal regulations a management program decision does not include routine state permits or regulatory actions. But, it does include the classification of areas for state action, including restriction or acquisition. Thus, the potential for significant local involvement is in for instance, the process whereby an area is designated an area of critical environmental concern by the Secretary, the acquisition of a beach with state funds, or the taking by eminent domain by the Department of Public Utilities of a site for an energy facility approved by the Energy Facilities Siting Council. A great many of these actions may be completely consistent and welcomed by local governments. With some, for instance, the Wetland Restriction Program, the standard procedures of the Department of Environmental Management include meetings with town officials and individual land-owners at the earliest stages of the restriction process. Or for instance, one of the factors which the Secretary may evaluate in deciding whether or not to designate an area of critical environmental concern is the amount of public consensus on the intrinsic value of the area.

The Monitor will provide notice of such proposed state actions. When local governments do agree with the state action, they are urged

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<sup>5</sup> In addition to the authorities cited specifically in this discussion, numerous other acquisition authorities are described in the Rice Report Appendix D. The broadest of these is in Chapter 21A (2)(26) which allows EOEAs agencies to acquire real or personal property by eminent domain or otherwise, subject to appropriation.

to respond positively or indicate their waiver before the thirty days have elapsed in order to prevent unnecessary delay. Where the local governments feel that the state action would conflict with the local zoning ordinances, decisions or other actions (but not if it simply consists of additional but different requirements) it may so submit its views and ask for a public hearing. The state is not bound to follow the local viewpoint, but it shall consider those views and is required, under Section 7.96 of the Secretary's Regulations, to respond in writing to the local comments. If no response is received from the local government within the 30-day period, it is presumed to have waived its rights to comment.

Since one of the major purposes of the CZM program is to work with local governments to assist them in revising their zoning ordinances to be consistent with the CZM plan and to revise the plan to be responsive to local situations, over time there should be relatively few conflicts between state actions in the coastal zone and local ordinances. Municipalities, by taking the initiative themselves, can further many of the policies and objectives of the CZM plan. The adoption of waterfront zoning districts encouraging water dependent uses serves to meet CZM's port and harbor policies. Site plan review and design review procedures can ensure that developments in developed harbors provide visual and physical access to waterfronts. The enactment of floodplain zoning and wetland and dune by-laws help to meet the marine environment and coastal hazard policies of the CZM plan. Sign ordinances and the establishment of historic and scenic districts can serve to meet the plan's visual environment objectives and policies.

Impact or performance controls allow communities to move away from rigid zoning districts and inflexible definitions of permissible uses. Instead, projects are reviewed against various standards. This review attempts to measure the impact various types of new development might have on the land itself and on municipal services required to accommodate the change. Standards may cover a percentage of impermeable cover, amount of cut and fill, type of building material, vegetation removal, or provision for open space. Cluster zoning or planned unit development procedures allow for more compact development patterns thereby economizing on municipal service and preserving coastal open space. The means that CZM and other agencies such as Regional Planning Agencies or the State Department of Community Affairs may provide communities with such land use assistance were described in Part IV. Such controls, if adopted by local governments, could go far in meshing zoning ordinances with CZM objectives.

#### CONTINUING EVOLUTION OF THE COASTAL ZONE MANAGEMENT SYSTEM

The Massachusetts Coastal Zone Management Plan essentially takes existing state laws and programs, provides them with unified criteria and standards for their implementation in the coastal zone and retains a general budgetary oversight, performance evaluation, conflict resolution, federal consistency, and community technical assistance capacity in the Office of the Secretary. The management system was designed in this way because many people felt that Massachusetts had



sufficient environmental legislation, but that the immediate need was to synchronize and coordinate existing programs. But this is not the only option. California has created a structure of six regional commissions and a state commission, composed of public officials and members of the public, which issue permits for all land and water uses within the coastal zone, with other state and local agencies continuing their previous jurisdictions. Oregon's structure calls for local governments to create local coastal zone plans and to bring their local ordinances into compliance with state goals and guidelines. In the absence of sufficient progress, the state may develop a comprehensive plan for the local jurisdiction. Already existing in Massachusetts, and operating as a somewhat unique component of the CZM programs, is the Martha's Vineyard Commission (see Part II of this chapter). Presently pending in the legislature are proposals to create a Boston Harbor Commission consisting of representatives from Lynn to Cohasset and various public agencies which would prepare a plan for the Boston Harbor. The Commission would be the primary licensing agency unless the towns agree to implement the plan. If they have so assented, decisions can be appealed to the Commission only when a violation of the plan is alleged. Yet another option is two bills pending before the House this session to create local coastal zone management agencies.

Many of the citizens advisory committees and the Governor's Task Force have seriously discussed the idea of forming regional bodies like the Martha's Vineyard Commission or of having a state/local structure with some decisions made completely at the local level and others appealable or decided in the first instance at the state level. The CZM Program is intended to be an evolving program and it welcomes the continued participation and interest of citizens in creating a coastal zone program which can be responsive to the needs of the state as a whole and to the citizens of any particular region. One of the functions of the continuing CAC's and Task Force will be to prepare and present proposals for alternative management systems for public and legislative discussion.

With the advice of the state and regional citizen advisory groups, the Secretary of Environmental Affairs may seek approval from the U.S. Secretary of Commerce for an amendment or modification to the CZM Program if the amendment is:

- (a) justified by changes in coastal zone needs, problems, issues, priorities, state law, or implementation procedures; and
- (b) in compliance with the policies and findings of the Coastal Zone Management Act.

If the proposed amendment constitutes a major change and would lead to significant impact on the environment, both National Environmental Policy Act and Massachusetts Environmental Policy Act<sup>6</sup> requirements would have to be met. Also, if the proposed modification involves a change in the Secretary of Environmental Affairs' regulation establishing the CZM program or other regulations, the state's Administrative Procedures Act (MGLA, Ch. 30) would have to be complied with.

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<sup>6</sup>For a description of Massachusetts Environmental Policy Act requirements see the Section on Implementation Roles above.



## APPENDICES



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## Appendix A: Legal Documents

Vol. I p. a-3 line 2 change the words

"For consistency" to "To be exact."

(For consistency, the actual boundary is 100 feet inland of the inland side of the road.)

As stated in the Coastal Zone Chapter, where the road may have excluded some significant resource areas, the boundary line departs from the road to encompass them. Tidal rivers and adjacent uplands are included, at a minimum, to the extent of vegetation affected by measurably saline water. Anadromous fish runs are included, as well as their floodplains, to the fresh water breeding area, if such area is within a coastal town.

#### Upper North Shore

At New Hampshire border follow Rt. 1 south to Rt. 110. Follow Rt. 110 west to I95. Follow I95 south over Merrimack River. Follow Ferry Road east to High Street into Newburyport. Take Rt. 1 south to Boston Road. Go west on Boston Road, then south on Middle Street. Turn west onto Orchard Street to Central Street. Turn southeast on School Street, then east on Elm Street to Rt. 1. Take Rt. 1 south to Central Street in Rowley. Take Central Street into Rowley center. Follow Rt. 1A and Rt. 133 through Ipswich. At Candelwood Golf Club, turn southwest onto Candelwood Road. Take Chebacco Road south to Choate Road. Follow Choate back to Rt. 133. Follow Rt. 133 into Essex. Take right onto Martin Street heading southwest. Take Western Avenue. Turn left onto Apple heading southeast. Then head north on Southern Avenue back to Rt. 133. Follow Rt. 133 to Rt. 127. Follow Rt. 127 through Manchester into Beverly (Lower North Shore region).

Cape Ann Boundary (All land seaward of this boundary is included in the Coastal Zone.) At Rt. 128 and Washington Street interchange, follow Washington Street south into Gloucester center. Take a left on Prospect to Friend Street. Take Webster Street to Eastern Avenue. Take a right onto Witham Street to Starknought. Follow Starknought into Rockport joining Thatcher Road (Rt. 127A). Follow Thatcher Road into South St. Take a left onto Prospect Street. Take Summer Street west to Parker St. Then take Railroad Avenue to Granite Street. Follow Granite Street (Rt. 127) to Curtis St. Follow Quarry Road from the end of Curtis St. southwest to Leverett St. Follow Leverett St. to Washington - to N. Kilby Street - to Colburn St. then back to Washington St. Take a left onto Dennison St. to Holly Street back to Washington. Follow Stanwood St. to Cherry St. to Poplar St. back to Washington St. and the Rt. 128 rotary.

#### Lower North Shore

Southwest on Rt. 127 from Manchester into Beverly to Lothrop St. Southwest on Lothrop St. to Water St. Northwest on Water St. to Rantoul St. North on Rantoul St. to Elliot St. Northeast on Elliot St. (also Rt. 62) to Rt. 128. Rt. 128 south to Andover St. (Rt. 114). Southeast on Rt. 114 to Rt. 107. East on Rt. 107. South on Rt. 1A through Salem, and Swampscott to Lynn. North 1 block to Commercial St. in Lynn. West on Boston and Maine Railroad to Summer St. West on Summer St. to

Hamilton St. (was Hesper St.). West on Hamilton St. and then on to Holland. Left onto Elm St. and on to Central St. Central St. to Winter Street. Winter St. to Lincoln. Follow Lincoln to the Saugus/Revere line (Boston region).

Exception - Follow line 100 feet inland of 100 year flood contour around Forest River (between Salem and Marblehead) ending landward extension at Boston and Maine Railroad tracks.

#### Boston Boundary

Southwest on Salem St. (Lincoln St.) from the Saugus/Revere line. Southeast on the Bennett Highway. Through rotary then southeast on Rt. 1. South on Rt. 1 to 1A (Revere Beach Parkway) to intersection with northeast expressway. Southwest on N.E. expressway to Webster Avenue. Southeast on Webster Avenue to Eastern Avenue. West on Crescent Ave. to Broadway. South on Broadway to railroad. Southeast on railroad to Willow St. South on Willow St. to Congress Avenue to Park Street. West on Park Street to Chelsea Square. Northwest on Second Street to railroad. West on railroad to Rt. 16. West on Rt. 16 to Amelia Earhart Dam Road. Cross river on Amelia Earhart Dam Road to railroad. South on railroad (Somerville) to Mystic Avenue (Rt. 38). Southeast on Mystic Avenue to Sullivan Square (Charlestown). From Sullivan Square east on Medford Street to Rt. 95. Southwest on Rt. 95 to Fitzgerald Expressway (Rt. 3). South on Rt. 3 to Penn Central railroad (before interchange 16). Northeast on railroad track which intersects with Dorchester Ave. At this intersection a short unnamed street connects with B Street. Northeast on B Street to Second St. Southeast on Second St. to Dorchester St. Northeast on Dorchester St. to East Second St. East on East Second St. to P Street. South on P Street to Swallow St. West on Swallow St. to Scott St. South on Scott St. to East 8th St. West on East 8th St. to Patterson St. Southwest on Patterson to Old Colony Ave. South on Old Colony Ave. to Rt. 3. Rt. 3 to Neponset interchange. Rt. 203 west to Hallet St. South on Hallet St. to Hilltop St. West on Hilltop St. to Granite St. North on Granite St. to Minton St. West on Minton St. to Adams St. South on Adams St. to Dorchester Ave. South on Dorchester Ave. to Milton town line (middle of Neponset River). Milton town boundary southeast to intersection with boundary of Neponset River Reservation. Follow reservation boundary east, southeast, then northeast across Rt. 3 to intersection with Granite Ave. Then southeast on Granite Ave. to West Squantum St. Follow West Squantum St. to intersection of Hancock Street (Rt. 3A). Follow Hancock Street south to Southern Artery.

Southeast on Southern Artery (Rt. 3A) to railroad just south of Fore River. East on railroad to intersection with Main St. (Hingham). East on Main St. which becomes Winter St. to Rt. 228 (East St). Northeast on Rt. 228 to Summer St. North on Summer St. to Rockland St. Northeast on Rockland St. to intersection with Summer St. South on Summer St. to Rt. 3A. East on Rt. 3A to Cohasset (South Shore region).

#### South Shore

South on Rt. 3A through Cohasset to Scituate. West on Rt. 123 to River St. South on River St. to Elm St. South on Elm St. to West Elm St. South on West Elm St. to Oldham St. East on Oldham St. to Barker

St. (Rt. 14). North on Barker St. to Rt. 53. North on Rt. 53 to Water St. Northwest on Water St. to Rt. 139. East on Rt. 139 to Union St. North on Union St. to Highland St. East on Highland St. to Spring St. Northeast on Spring St. to Rt. 3A. Rt. 3A to Old Plain St. West on Old Plain St. to Cross St. South on Cross St. to Ocean St. West on Ocean St. to Mt. Skirgo St. West on Mt. Skirgo to North St. Southwest on North St. to Myrtle St. West on Myrtle St. to Union St. Southeast on Union St. to Keene St. North on Keene St. to River St. East on River St. to Temple St. Southeast on Temple St. to Franklin St. North on Franklin St. to Acorn St. North on Acorn St. to Rt. 3A (Plymouth region).

#### Plymouth Bay

South on Rt. 3A through Duxbury to Main Street, Kingston. West on Main Street to Elm Street. South on Elm Street to Brook Street (Rt. 80). East on Brook Street to Rt. 3A. South on Rt. 3A to Bourne. Follow the Bourne-Plymouth town line southwest to Red Brook Road (Buzzards Bay region).

#### Mount Hope Bay

Start in Seekonk on Rt. 6 at the Rhode Island border southeast to Barney (Rehoboth). North on Barney. East on County. South on Mason. Southeast on Rt. 6 (Swansea). North and East on Millford. South on Hortonville. East on Main. South on Elm. South on Lees River Road, Somerset. Southeast on Rt. 6 (Somerset). North on 138. West on Main Street (Dighton). North and East on Elm. North on Rt. 138 to Taunton/Dighton corporate line. Along Dighton/Taunton line in Threemile River to Taunton River, north along Berkley-Taunton line in the Taunton River. East across Dirt Rd. at approximately 41°51'45" N, 71°06'15" W. North on Berkley. South on Forest. East on Elm. South on S. Main. South on N. Main (Freetown). East on Mill. East on Slab Bridge Road. South on N.Y./New Haven Railroad. North on High. South on S. Main. South on N. Main, Fall River. South on Western Expressway to I 195. Southwest on Rt. 138 (Broadway). West on Williams St. South on Bay St. to Rhode Island border.

#### Buzzards Bay

West from Bourne/Wareham town line on Red Brook Road. West on Route 6-28. Northwest on Route 25. Southwest on I 195. East on Point Road (Marion). West and south on Route 6 through Marion, Mattapoisett and some of Fairhaven. South on Shaw Road, Fairhaven. West on Shaw Rd. North on Weeden. West on railroad grade. South on Pleasant. West on Cedar Street. North on Fort Street. West on Church. North on Main. North on South Main, Acushnet. West on Main, Acushnet, New Bedford. South on River. West on Howard. South on Riverside. West on Coffin. South on Belleville. West on I-195. South on Front. West on Wamsutta. South on Route 18. West on Elm. South on Haus. East on Union. South on 2nd. South on MacArthur Drive. South on Front. East on Gifford. South on Harbor. East on Cove. South on Cleveland. East on Rodney. South on Cleveland. East on Butler. South on Swan. South on Mina. South on Lighthouse Lane. South on Belmont. West on Portland. South on Fort. West on Rodney French Boulevard. North on Brock. West on

Cove. South on Padanaram to Dartmouth. West on Rogers. South on Dartmouth. West on Prospect. North on Elm. West on Russells Mills. South on Tucker. Southwest on Russells Mills. Southwest on Horseneck Road to Westport. North on Horseneck Road. North on New Pine Hill Road. North on Pine Hill Road. West on County Road. North on Reed. North on Forge. West on Route 177. South on Drift. West on Hicks-bridge. North on Main. West on Adamsville to Rhode Island border.

#### Cape Cod and the Islands

The entire Cape and the islands of Nantucket and Martha's Vineyard are included in the Massachusetts Coastal Zone Boundary.



DAVID STANDLEY  
COMMISSIONER

# *The Commonwealth of Massachusetts*

*Executive Office of Environmental Affairs  
Department of Environmental Quality Engineering  
100 Cambridge Street, Boston 02202*

February 28, 1977

Evelyn F. Murphy, Secretary  
Executive Office of Environmental Affairs  
100 Cambridge Street  
Boston, Ma. 02202

Dear Secretary Murphy:

Inasmuch as the implementation of the Coastal Zone Management Program will require the coordination of programs within my agency with other EOEAs, and with the Office of the Secretary, I hereby express my support for the program. I hereby request to jointly implement the program. I accept the final Coastal Zone Management Plan, as approved by the Governor, as a statement of the state environmental policy for the coastal zone.

I further agree that:

(1) I will adopt and incorporate the rules and regulations promulgated by the Secretary for implementation of the program, to the extent permissible by law.

(2) I will adopt within my agencies, following proper procedures, rules, regulations, and appropriate procedures, for those parts of the Plan dependent upon the authorities and statutory responsibilities of my agencies in order to improve the coordination of activities and programs within EOEAs, pending formal approval of the Plan by the Governor.

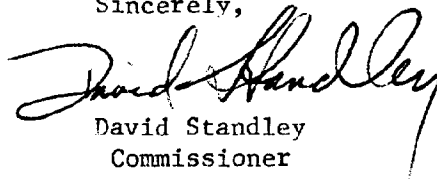
(3) I will provide legal standing in my affected agencies' proceedings for other agencies within EOEAs, if so requested.



(4) I request that to enable the Secretary to coordinate and improve the operations within EOEa as they relate to the issues of the Coastal Zone Management Plan, when conflicts arise between my agency and other agencies of EOEa as to the consistency of my agency's action with the Coastal Zone Management Plan, that the Secretary invoke the conflict resolution process, as established by Chapter 21A of the General Laws, Section 4, first by informal consultation and then if necessary, by formal proceedings. A statement of findings shall be prepared for all such formal proceedings.

I am currently reviewing the proposed submission in detail and support the policies relevant to my agency and the overall concept of the Plan. This statement of agreement should not be construed to change, alter or affect statutory powers within my agency.

Sincerely,

A handwritten signature in dark ink, appearing to read "David Standley", is written over the typed name and title. The signature is fluid and cursive, with the first name "David" and last name "Standley" clearly distinguishable.

David Standley  
Commissioner



RICHARD E. KENDALL  
COMMISSIONER

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*Department of Environmental Management*  
*Leverett Saltonstall Building, Government Center*  
*100 Cambridge Street, Boston 02202*

March 10, 1977

Evelyn F. Murphy, Secretary  
Executive Office of  
Environmental Affairs  
Leverett Saltonstall Building  
100 Cambridge Street  
Boston, Massachusetts 02202

Dear Secretary Murphy:

Inasmuch as the implementation of the Coastal Zone Management Program will require the coordination of programs within my agency with other EOEAs, and with the Office of the Secretary, I hereby express my support for the program. I hereby request to jointly implement the program. I accept the final Coastal Zone Management Plan, as approved by the Governor, as a statement of the state environmental policy for the coastal zone.

I further agree that:

(1) I will adopt and incorporate the rules and regulations promulgated by the Secretary for implementation of the program, to the extent permissible by law.

(2) Following proper procedures, I will adopt within my agencies, rules, regulations, and appropriate procedures for those parts of the Plan dependent upon the authorities and statutory responsibilities of my agencies in order to improve the coordination of activities and programs within EOEAs, pending formal approval of the Plan by the Governor.

(3) I will provide legal standing in my affected agencies' proceedings for other agencies within EOEAs, if so requested.

Evelyn F. Murphy, Secretary

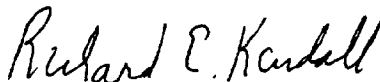
Page 2

March 10, 1977

(4) I request that to enable the Secretary to coordinate and improve the operations within EOEa as they relate to the issues of the Coastal Zone Management Plan, when conflicts arise between my agency and other agencies of EOEa as to the consistency of my agency's action with the Coastal Zone Management Plan, that the Secretary invoke the conflict resolution process, as established by Chapter 21A of the General Laws, Section 4, first by informal consultation and then if necessary, by formal proceedings. A statement of findings shall be prepared for all such formal proceedings.

I am currently reviewing the proposed submission in detail and support the policies relevant to my agency and the overall concept of the Plan. This statement of agreement should not be construed to change, alter or affect statutory powers within my agency.

Sincerely,

A handwritten signature in dark ink, reading "Richard E. Kendall". The signature is written in a cursive, slightly slanted style.

Richard E. Kendall  
Commissioner

REK/RL:kc



BRUCE S. GULLION  
COMMISSIONER

*The Commonwealth of Massachusetts*  
*Department of Fisheries, Wildlife and Recreational Vehicles*  
*100 Cambridge Street*  
*Boston, Massachusetts 02108*

March 10, 1977

Evelyn F. Murphy, Secretary  
Executive Office of  
Environmental Affairs  
Leverett Saltonstall Building  
100 Cambridge Street  
Boston, Massachusetts 02202

Dear Secretary Murphy:

Inasmuch as the implementation of the Coastal Zone Management Program will require the coordination of programs within my agency with other EOEAs, and with the Office of the Secretary, I hereby express my support for the program. I hereby request to jointly implement the program. I accept the final Coastal Zone Management Plan, as approved by the Governor, as a statement of the state environmental policy for the coastal zone.

I further agree that:

(1) I will adopt and incorporate the rules and regulations promulgated by the Secretary for implementation of the program, to the extent permissible by law.

(2) Following proper procedures, I will adopt within my agencies, rules, regulations, and appropriate procedures for those parts of the Plan dependent upon the authorities and statutory responsibilities of my agencies in order to improve the coordination of activities and programs within EOEAs, pending formal approval of the Plan by the Governor.

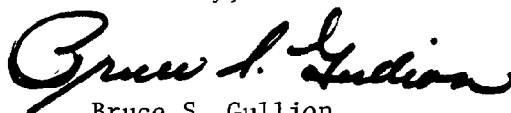
(3) I will provide legal standing in my affected agencies' proceedings for other agencies within EOEAs, if so requested.

Evelyn F. Murphy, Secretary  
Page 2  
March 10, 1977

(4) I request that to enable the Secretary to coordinate and improve the operations within EOEAs as they relate to the issues of the Coastal Zone Management Plan, when conflicts arise between my agency and other agencies of EOEAs as to the consistency of my agency's action with the Coastal Zone Management Plan, that the Secretary invoke the conflict resolution process, as established by Chapter 21A of the General Laws, Section 4, first by informal consultation and then if necessary, by formal proceedings. A statement of findings shall be prepared for all such formal proceedings.

I am currently reviewing the proposed submission in detail and support the policies relevant to my agency and the overall concept of the Plan. This statement of agreement should not be construed to change, alter or affect statutory powers within my agency.

Sincerely,

A handwritten signature in cursive script, reading "Bruce S. Gullion".

Bruce S. Gullion  
Commissioner

BSG/RL:kc



*The Commonwealth of Massachusetts*  
*Metropolitan District Commission*

*20 Somerset Street, Boston 02108*

John F. Snedeker  
Commissioner

March 18, 1977

Evelyn F. Murphy, Secretary  
Executive Office of Environmental Affairs  
Leverett Saltonstall Building  
100 Cambridge Street  
Boston, Mass. 02202

Dear Secretary Murphy:

Inasmuch as the implementation of the Coastal Zone Management Program will require the coordination of programs within the Metropolitan District Commission with programs of other EOEAs and of the Office of the Secretary, the Commission hereby expresses its support for the program. We are currently reviewing the proposed submission in detail, and endorse the policies relevant to the Commission and the overall concept of the Plan. Subject to our review of the final plan to determine whether the plan is consistent with the Commission's responsibilities and authorities, I hereby accept the final Coastal Zone Management Plan, as approved by the Governor, as a statement of the state environmental policy for the coastal zone, and hereby request that it be jointly implemented with the Secretary. Again, subject to our review of the final plan, the Commission agrees to the following:

(1) The Commission will adopt and incorporate the rules and regulations promulgated by the Secretary for implementation of the program, to the extent permissible by law.

(2) Following proper procedures, the Commission will adopt rules, regulations, and appropriate procedures for those parts of the Plan dependent upon the authorities and statutory responsibilities of the Commission in order to improve the coordination of activities and programs within EOEAs, pending formal approval of the Plan by the Governor.

(3) The Commission will provide legal standing for any of the agencies within EOEAs, at any hearings which may be held involving issues of the Plan, if so requested.

Evelyn F. Murphy, Secretary  
Page 2  
March 18, 1977

(4) The Commission requests that to enable the Secretary to coordinate and improve the operations within EOEa as they relate to the issues of the Coastal Zone Management Plan, when conflicts arise between the Commission and other agencies of EOEa as to the consistency of the Commission's action with the Coastal Zone Management Plan, that the Secretary invoke the conflict resolution process, as established by Chapter 21A of the General Laws, Section 4, first by informal consultation and then, if necessary, for formal proceedings. A statement of findings shall be prepared for all such formal proceedings.

This statement of agreement should not be construed to change, alter or affect statutory powers within the Metropolitan District Commission.

Sincerely,

A handwritten signature in black ink, reading "John F. Sneider". The signature is written in a cursive, flowing style with a large initial "J".

JOHN F. SNEDEKER  
Commissioner

JFS/RL/SGC:ml



# *The Commonwealth of Massachusetts*

*Department of Food and Agriculture*

*Leverett Saltonstall Building, Government Center*

*100 Cambridge Street, Boston 02202*

March 10, 1977

Evelyn F. Murphy, Secretary  
Executive Office of  
Environmental Affairs  
Leverett Saltonstall Building  
100 Cambridge Street  
Boston, Massachusetts 02202

Dear Secretary Murphy:

Inasmuch as the implementation of the Coastal Zone Management Program will require the coordination of programs within my agency with other EOEAs, and with the Office of the Secretary, I hereby express my support for the program. I hereby request to jointly implement the program. I accept the final Coastal Zone Management Plan, as approved by the Governor, as a statement of the state environmental policy for the coastal zone.

I further agree that:

(1) I will adopt and incorporate the rules and regulations promulgated by the Secretary for implementation of the program, to the extent permissible by law.

(2) Following proper procedures, I will adopt within my agencies, rules, regulations, and appropriate procedures for those parts of the Plan dependent upon the authorities and statutory responsibilities of my agencies in order to improve the coordination of activities and programs within EOEAs, pending formal approval of the Plan by the Governor.

(3) I will provide legal standing in my affected agencies' proceedings for other agencies within EOEAs, if so requested.




Evelyn F. Murphy, Secretary  
Page 2  
March 10, 1977

(4) I request that to enable the Secretary to coordinate and improve the operations within EOEa as they relate to the issues of the Coastal Zone Management Plan, when conflicts arise between my agency and other agencies of EOEa as to the consistency of my agency's action with the Coastal Zone Management Plan, that the Secretary invoke the conflict resolution process, as established by Chapter 21A of the General Laws, Section 4, first by informal consultation and then if necessary, by formal proceedings. A statement of findings shall be prepared for all such formal proceedings.

I am currently reviewing the proposed submission in detail and support the policies relevant to my agency and the overall concept of the Plan. This statement of agreement should not be construed to change, alter or affect statutory powers within my agency.

Sincerely,

  
Frederic Winthrop, Jr.  
Commissioner

FW/RL:mc

Memorandum of Understanding Between  
the Executive Office of Environmental Affairs  
and the Energy Facilities Siting Council  
Relative to the Coastal Zone Management Plan

This Memorandum of Understanding sets forth the areas of responsibility and the operating procedures to be followed by the EFSC and the EOEa under the Coastal Zone Management plan.

Statement of Existing Agency Powers

1. The EOEa and its appropriate departments and divisions are responsible for carrying out state environmental policies and enforcing state environmental laws.
2. Under the Coastal Zone Management Act, the EOEa has the responsibility for insuring compliance with the state Coastal Zone Management plan, as approved by the Governor and implemented by the regulations of the Secretary of EOEa.
3. The EFSC has the mandate under M.G.L.A. Chapter 164, Section 69G, et. seq. to insure a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.
4. Pursuant to its statutory scheme, the EFSC reviews proposals for major energy facilities submitted to it by utilities and other energy companies. In its review process the EFSC must determine whether the proposed facilities are consistent with current health, environmental protection, and resource use and development policies as adopted by the Commonwealth. The EFSC may inquire into the need for the facility, the economics of the facility and alternative proposals and sites. An approval from the EFSC is required before an applicant commences construction on any energy facility subject to the act.

Responsibilities under the Coastal Zone Management Program

In agreeing to the following procedures and responsibilities, the EOEa and EFSC recognize the statutory limitations of both agencies and do not intend this document to expand or limit their existing statutory powers in any way.

1. The EFSC hereby expresses its support for the Coastal Zone Management program and agrees to cooperate and coordinate with the EOEa in the implementation of said program.
2. The EFSC hereby agrees to recognize the final Coastal Zone Management Plan, as approved by the Governor, as a statement of health, environmental, and resource use and development policies of the Commonwealth in the coastal zone.
3. The EFSC hereby agrees to act consistently with the policies of the plan and to amend or adopt such regulations and procedures as may be necessary to implement those parts of the plan which fall under its jurisdiction, including, but not limited to:

a) a regulation or administrative bulletin providing for cooperation between the EFSC and the EOEa on the review of any Long-Range Forecast, Supplement, Notice of Intention to Build an Oil Refinery, or Certificate of Environmental Impact and Public Need in which an energy facility is proposed for the coastal zone. Such regulation or bulletin will include provisions

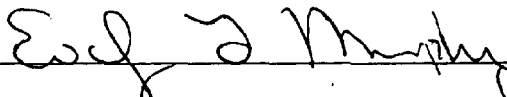
- i) that all such submissions will be forwarded to the EOEa for comment and review prior to any hearing before the EFSC;
- ii) that the EOEa and the EFSC will cooperate on developing guidelines for data for initial review pursuant to M.G.L. Chapter 164, Section 691 (3); and
- iii) that such guidelines will contain a requirement that for any proposed coastal facility, an applicant provide information for at least two alternative sites, one of which shall be an inland site.

b) a regulation or administrative bulletin that recognizes that the administration of the Coastal Zone Management plan by the EOEa or any subdivision thereof may be substantially and specifically affected by a proceeding before the EFSC in which the proposed site or alternatives are located in the Coastal Zone and will therefore recognize the standing of the Coastal Zone Management office in any such proceeding.

4. In conducting its review of facilities proposed for critical areas of environmental concern, the EFSC will give prime consideration to the environmental impact in these areas. While thus insuring a minimum impact on the environment in such critical areas, the EFSC will continue to consider the need for a necessary energy supply at the lowest possible cost and will retain its final power under Massachusetts law over the siting of energy facilities.

5. The EFSC agrees to adopt forthwith rules and regulations which will implement paragraphs 2, 3 and 4 of their MOU, and the CZM agrees that upon adoption of satisfactory rules and regulations by EFSC, decisions by the Council will be deemed for any federal license or permit, to be consistent with the CZM Program under the provisions of Section 307 of the CZMA.

For the Executive Office of Environmental Affairs:



For the Energy Facilities Siting Council:



ESTABLISHMENT OF THE COASTAL ZONE MANAGEMENT PROGRAM BY  
THE EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS BY RULES  
AND REGULATIONS TO BE PROMULGATED BY THE SECRETARY OF  
ENVIRONMENTAL AFFAIRS

DRAFT REGULATION\*

<u>1.0</u>	Authority
<u>2.0</u>	Purpose
<u>3.0</u>	Definitions
<u>4.0</u>	Abbreviations
<u>5.0</u>	Establishment of the Coastal Zone Management Office and Adoption of the CZM Plan
<u>6.00</u>	Procedures for Actions in the Coastal Zone
<u>6.10</u>	Role of EOEa Agencies
<u>6.20</u>	Resolution of Conflicts
<u>6.30</u>	Hearings Conducted by EOEa Agencies
<u>6.40</u>	Procedures for Designation of an Area of Critical Environmental Concern in the Coastal Zone
<u>6.60</u>	Continuing Consultation Mechanisms with Local, Regional, and Interstate Agencies, and other State Agencies
<u>7.00</u>	Federal Consistency Procedures
<u>8.00</u>	Performance Evaluation
<u>9.00</u>	Miscellaneous Provisions

\*Prior to promulgation, this draft regulation will be subject  
to public review pursuant to MGLA Chapter 30A.

1.0 Authority - These regulations are promulgated by the Secretary of the Executive Office of Environmental Affairs pursuant to the Reorganization Acts and other authorities. Specifically, they are promulgated pursuant to Chapter 6A of the General Laws (hereinafter MGL Ch. 6A, SS. 2-7), MGL Ch. 21A, SS. 2, 3, and 4, Chapter 706 of the Acts of 1975 (codified throughout the Massachusetts General Laws) and Chapter 1230 of the Acts of 1973.

#### COMMENTARY

All of the authorities cited above are a part of the legislation which has reorganized Massachusetts government. The basic intention of this legislation has been to organize the administration of state government along functional lines, so that agencies with related areas of responsibility can operate in a coordinated and consistent manner.

The first piece of Reorganization legislation was Chapter 704 of the Acts of 1969, codified in part as Ch. 6A, SS. 1-7, which created the nine Executive Offices, including Environmental Affairs, established the position of the Secretary, and gave to her powers to accept funds, to have access to the records of all agencies within the Executive Office, and empowered her to:

"Act as the executive officer of the governor for accomplishing the purposes of his executive office. He shall conduct comprehensive planning with respect to the functions of said office and coordinate the activities and programs of the state agencies therein. He shall conduct studies of the operations of said agencies with a view to effecting improvements in administrative organization, procedures and practices, and to promoting economy, efficiency, and avoiding useless labor and expenses in said agencies. He shall from time to time recommend to the governor such changes as he shall deem desirable in the laws relating to the organization, structure, efficiency or administrative functions, services, procedures and practices of any such agency or agencies. He shall review and act upon budgetary and other financial matters concerning said agencies in accordance with sections two C, three, three A, four, nine B and twenty-nine of Chapter twenty-nine."

The sections of Chapter 29 cited above and other sections codified throughout the General Laws were all a part of Chapter 1230 of the Acts of 1973. This piece of legislation created strong budgetary and administrative authority in the Secretary including the authority to approve or disapprove of the annual budget requests of the constituent agencies or of the year-round use of funds (for personnel, capital expenditures, administration, etc.); to approve or disapprove of the creation of positions and the hiring of personnel; and to approve or disapprove of general operating procedures (travel, over-time, etc.).

Chapter 704 contained a further charge to the Executive Offices (printed in the General Laws Annotated before Section 1 of Chapter 6A) which stated the basic intent of the Reorganization efforts.

"Section 50. Each secretary first appointed to any of the executive office established by chapters six A and seven of the General Laws, or his successor in office, as the case may be, shall, within two years following such first appointment, recommend to the governor such changes in the laws relating to such executive office, and to the departments, commissions, offices, divisions, institutions and other agencies therein, as he deems necessary for the accomplishment of the purposes for which said executive office was established.

"Such recommendations shall be made with a view to the elimination of duplication and overlapping in the functions, administrative practices and facilities of said agencies, the combination and coordination of information systems, the creation of administrative structures which will assure coordinated and joint planning, the establishment of clear and readily identifiable lines of authority and allocations of responsibility, the coordination and consolidation of the delivery of services at state and regional levels, and the enlargement of career opportunities.

Such recommendations shall be prepared by each secretary on the basis of a study of the departments, commissions, offices, divisions, institutions and other agencies within his executive office to be conducted in accordance with such management guidelines as the commissioner of administration may from time to time promulgate."

Responding to the charges to create a coordinated management structure which could eliminate duplication and utilize joint planning, the Executive Office of Environmental Affairs then drafted further Reorganization legislation. Chapter 806 of the Acts of 1974 dealt specifically with Environmental Affairs. The provisions of this law (codified in part in Chapter 21A) grants extensive new powers to the Secretary. This legislation is discussed at length in the Management Chapter of the Coastal Zone Management Plan. In summary, it establishes the Executive Office as "the primary agency of the Commonwealth for environmental planning," charges the Executive Office and the EOEA agencies "to carry out the state environmental policy" in 28 diverse ways; empowers the Secretary to "conduct comprehensive planning with respect to the functions of the office and (to) coordinate the activities and programs of the departments and divisions within the office; and in "coordinating and improving the operations of all (agencies) within the office," enables the Secretary to resolve conflicts between agencies, to jointly implement programs with agencies and to coordinate program activities involving two or more agencies.

The final piece of legislation, Chapter 706 of the Acts of 1975, completed the Reorganization process for Environmental Affairs by assigning and transferring specific functions and agencies with the Executive Office of Environmental Affairs.

## 2.0 Purpose:

These regulations are promulgated to establish the Coastal Zone Management Plan as a statement of the state environmental policy for the Executive Office of Environmental Affairs; to ensure that the diverse powers and responsibilities within the Executive Office of Environmental Affairs which operate in or affect the resources of the coastal zone are administered in a coordinated and consistent manner in order to carry out the purposes of the Reorganization Acts; to comply with the requirements of the Federal Coastal Zone Management Act of 1972, as amended (16 U.S.C. Sec. 1451 et. seq.) by implementing the CZM Plan, conducting continued planning and receiving grant awards, to establish the Coastal Zone Management Office within the Office of the Secretary; and to conduct such other activities as are consistent with the CZM Plan and state and federal law.

## 3.0 Definitions:

Action shall mean any work, project, use or activity (a) which is directly undertaken by any agency, or (b) which is supported by any form of financial assistance for an agency, or (c) which involves the issuance of a lease, permit, license, certificate, or any entitlement for use by any agency.

Activity shall mean "action" or, in Part 7.00 et. seq. shall be restricted to just one of the three components of "action." The federal consistency regulations utilize the words activity, proposal, project, etc., to variously describe when a federal agency is directly undertaking an "action", is providing assistance for an "action", or permitting or licensing an "action". Since Part 7.00 et. seq. were written to parallel the federal regulations, terms will be used inter-changeably therein.

Affected EOE Agency shall mean any EOE agency identified by the Secretary pursuant to Section 7.24 of these regulations concerning Resolution of Conflicts.

Appropriate EOE Agency shall mean any EOE agency whose activities, authority, jurisdiction or concerns are conducted within the coastal zone, affect the coastal zone, are identified in the CZM Plan, or are otherwise affected by or responsible for carrying out the policies of the CZM Plan. The Secretary may, upon consultation with an EOE agency, decide that such EOE agency shall not be included within this definition. This definition shall include, but is not limited to: the Coastal Zone Management Office, the Division of Conservation Services, Environmental Impact Review, and the Division of Law Enforcement, within the Office of the Secretary; the Wetlands, Waterways, and Community Sanitation Programs and the Division of Mineral Resources within the Division of Land and Water Use, the Division of Outdoor Advertising, the Division of Water Pollution Control, the Division of Water Supply, and the Division of Air and Hazardous Materials within the Department of Environmental Quality Engineering; the Ocean Sanctuaries Program, Coastal Wetlands Restriction Program, Scenic Rivers Program, the Division of Water Resources and the administration of state recreation areas and state lands within and by the Department of Environmental Management; the Metropolitan District Commission; the Division of Marine Fisheries, Public Access Board and Division of Marine and Recreational Vehicles within the Department of Fisheries, Wildlife and Recreational Vehicles; and the Plant Pest Control and Agricultural Assessment Program within the Department of Food and Agriculture.

Area of Critical Environmental Concern shall mean an area which has been so designated by the Secretary of Environmental Affairs pursuant to the procedures outlined in Section 6.40 et. seq.



Area for Preservation or Restoration shall mean those areas which under the federal Coastal Zone Management Act of 1972 are required to be designated by states in order to preserve or restore them for their conservation, recreational, ecological, or esthetic values. In Massachusetts such areas will be designated by the Secretary as Areas of Critical Environmental Concern.

Boundary - see Coastal Zone Boundary.

Certification Statement shall mean that statement which an applicant for a federal permit or permit for a proposed activity shall submit to CZM for its concurrence on the consistency of that proposed activity with the state CZM Plan.

Coastal Zone shall mean that area defined by the seaward limit of the Massachusetts territorial waters; i.e., three miles beyond the mean low water line or three miles beyond the Exterior Line of the Commonwealth as established by the Marine Boundaries Commission of the General Court; by the Massachusetts-New Hampshire border, by the Massachusetts-Rhode Island border, and by the roads, rail lines, or rights-of-way listed in Appendix A of the CZM Plan and mapped on the CZM regional maps, scale 1:40,000. The coastal zone shall further mean to include all islands contained within the afore-described area, but shall exclude federal lands. The coastal zone shall further mean to include the following areas inland of the roads, rail lines, or rights-of-way described in Appendix A: intertidal areas, coastal wetlands and beaches, tidal rivers and adjacent uplands to the minimum extent of vegetation affected by measurable saline water, and anadromous fish runs to the fresh water breeding area.

Coastal Zone Boundary shall mean the line of demarcation between those lands and waters within the coastal zone and those lands and waters landward of the coastal zone.

Coastal Zone Management Act shall mean the federal Coastal Zone Management Act of 1972 (P.L. 92-583, 16 U.S.C. Sec. 1451 et. seq.), as amended.

Coastal Zone Management Office shall mean that office established within the Office of the Secretary pursuant to Section 5.0 of these regulations.

Consistency Determination shall be that statement required by the CZMA of federal agencies proposing an activity directly affecting the coastal zone. Please refer to Section 6.52 et. seq. of these regulations.

Consistency Certificate shall be that statement required by the CZMA to be prepared for all applications for federal licenses or permits in order to show their consistency of the proposed action with the CZM Plan. Please refer to Sections 6.40 - 6.51 of these regulations.

CZM Plan shall mean the two volume document plus appendices which includes text, objectives, policies, implementation measures, regional chapters, maps and other material which has been prepared by the Governor's Task Force on Coastal Resources, Citizen Advisory Groups, and the CZM staff of the Executive Office of Environmental Affairs, once it has been reviewed by the public and approved by the Secretary of Environmental Affairs, the Governor of the Commonwealth of Massachusetts and the Secretary of Commerce of the United States.

COMMENTARY

Prior to formal approval by the Secretary of Commerce, the documents described above are to be referred to as the Draft CZM Plan.

CZM Policy or CZM Policies shall mean one or any number of the policies adopted by Section 5.3 of these regulations, or as amended by Sections 9.2 or 9.3.

CZM Program shall generally mean the CZM policies adopted by Section 5.3; the textual and mapped material of the CZM Plan which shall clarify, support, apply or otherwise elaborate on the policies; and regulations, guideline, memoranda of understanding or other material which may be prepared to implement, interpret or otherwise effectuate the CZM policies.

Departments and Divisions - see EOEa agency.

EOEA Agency shall mean any agency, as defined by these regulations, under, within, or created by the Executive Office of Environmental Affairs.

Executive Office of Environmental Affairs shall mean the umbrella agency composed of an Office of the Secretary, five Departments (the Department of Environmental Quality Engineering, the Department of Environmental Management, Fisheries, Wildlife and Recreational Vehicles, the Metropolitan District Commission, and Food and Agriculture) and other agencies. It shall be referred to as EOEa.

Geographic Areas of Particular Concern shall mean those areas which are required by Sections 305(b)(2,4) of the CZMA to be inventoried and are designated by the CZM Plan and the means by which they will be controlled to be identified. They shall be the following: salt water marshes, shellfish beds, primary dunes, barrier beaches, salt ponds, anadromous fish runs, sandy beaches, estuaries, coastal embayments, flood plains, erosion areas, and port areas.

Local Government - for the purposes of Section 6.60 et. seq., of these regulations, shall mean a local body with the power to regulate or restrict the construction, alteration or use of land, water or structures thereon or thereunder and shall specifically include Boards of Selectmen, Planning Boards, Zoning Boards of Appeal, Conservation Commissions and the Martha's Vineyard Commission, but shall not include regulatory, as opposed to land use bodies such as a Shellfish Warden, the Board of Health, the Town Engineer, etc.

62-Monitor shall mean the bi-monthly publication of proposed actions and projects in the Commonwealth which require state permit or state funds, which shall be mailed free of charge to all Planning Boards/Boards of Selectmen,

Conservation Commissions in the coastal zone, and interested individuals or organizations in the coastal zone in order to insure adequate public notice and create an effective mechanism for continuing consultation and coordination among state, local, regional and federal agencies and members of the public. The 62-Monitor is created pursuant to Chapter 30, Section 62 of the Massachusetts General Laws.

Office of the Secretary shall mean the chief administrative, policy, program planning, and enforcement agency of EOEa. It is composed of the Division of Law Enforcement, the Division of Conservation Services, and special executive programs which include, at present, the Environmental Impact Review (the MEPA Program), and the Coastal Zone Management Office.

Significant Resource Area shall mean different types of areas, identified in the Plan as areas which play an important role in the marine ecosystem, which contain hazardous coastal conditions, have or potentially have recreational, visual, historic, archeological, or educational value, or are sites ideal for concentrated development.

Special Assistance and Development Areas shall mean sites which warrant special planning and funding in order to realize their potential for various types of development.

The Office shall mean the Executive Office of Environmental Affairs.

The Plan shall mean the CZM Plan.

The Secretary shall mean the Secretary of Environmental Affairs.

The State Environmental Policy shall mean those statements of environmental policy as identified by Section 5.1 of these regulations.

User Groups shall mean those groups who are in some measure involved with the use of the coastal resources. User groups may include, but need not either be limited to or include the following: recreation interests; commerce, business and utility interests; university, research and educational groups; state, federal and local governments, officials, planners; the Legislature; sportsmens groups, commercial fishermen; conservation and civic interests, and interested citizens.

#### 4.0 Abbreviations:

- APR - Area for Preservation or Restoration
- CZMA - Coastal Zone Management Act
- EOEA - Executive Office of Environmental Affairs
- GAPC - Geographic Area(s) of Particular Concern
- CZM - Coastal Zone Management
- NOAA - National Oceanic & Atmospheric Administration
- SADA - Special Assistance and Development Area
- SRA - Significant Resource Area

5.0 Establishment of the Coastal Zone Management Office and Adoption of the CZM Plan:

There shall be in the Office of the Secretary a Coastal Zone Management Office to be administered by a Director of Coastal Zone Management. The Office and the Director shall take such actions in furtherance of the CZM Plan and program as the Secretary may direct.

5.1 The State Environmental Policy:

Shall mean those statements of environmental policy as contained in:

- (a) Article 49 of the Constitution of the Commonwealth as added by Constitutional Amendment Article 97 which states:

"the people shall have the right to clean air and water, freedom from excessive and unnecessary noise, and the natural, scenic, historic, and esthetic qualities of their environment; and the protection of the people in their right to the conservation, development and utilization of the agricultural, mineral, forest, water, air and other natural resources is hereby declared to be a public purpose."

- (b) Chapter 30 of the General Laws, Section 61:

"all agencies, departments, boards, commissions and authorities of the Commonwealth shall review, evaluate, and determine the impact on the natural environment of all works, projects or activities conducted by them and shall use all practicable means and measures to minimize damage to the environment. Unless a clear contrary intent is manifested, all statutes shall be interpreted and administered so as to minimize and prevent damage to the environment;"

- (c) Executive Orders or other statements by the Governor which are expressly stated to be statements of the state environmental policy;
- (d) Statements of environmental policy promulgated by the Secretary of Environmental Affairs either in regulations or by Secretarial Order;
- (e) Statements of policy promulgated by the Secretaries of other Executive Offices or by other agencies of state government which are adopted by the Secretary of Environmental Affairs as a statement of state environmental policy by regulation or by Secretarial order.

Consistent with the requirements under Chapter 21A, Sections 2 through 4 to conduct comprehensive planning with respect to the functions of EOEa; to coordinate and improve program activities within EOEa; to implement programs jointly agreed to by the Secretary and EOEa agencies; to serve as the primary agency of the Commonwealth for environmental planning; and to carry out the state environmental policy including policies relating to areas of critical environmental concern, the CZM Plan is hereby promulgated as a statement of the state environmental policy for the coastal zone and these regulations are hereby adopted in order to implement the CZM Plan.

### 5.3

It shall be the state environmental policy to:

- 1) Conserve ecologically significant resource areas (salt marshes, shellfish beds, dunes, beaches, barrier beaches, and salt ponds) for their contribution to marine productivity and value as natural habitats.
- 2) Protect complexes of marine resource areas of unique productivity (Areas for Preservation or Restoration (APR's)); ensure that activities in or impacting such complexes are designed and carried out to minimize adverse effects on marine productivity, habitat values, water quality, and storm buffering of the entire complex.
- 3) Support attainment of the national water quality goals for all waters of the coastal zone through coordination with existing water quality planning and management agencies; ensure that water bodies within Areas for Preservation or Restoration are given priority for achievement and, where consistent with federal and state law, maintenance of the highest level of water quality; and ensure that all activities endorsed by CZM in its policies are consistent with federal and state effluent limitations and water quality standards.
- 4) Condition construction in water bodies and contiguous land areas to minimize interference with water circulation and sediment transport and to preserve water quality and marine productivity.
- 5) Ensure that dredging and disposal of dredged material minimize adverse effects on marine productivity.
- 6) Accommodate off-shore sand and gravel mining needs in areas and in ways that will not adversely affect marine resources and navigation.
- 7) Encourage and assist commercial fisheries research and development, restoration of fishery resources, the development of extensive and intensive aquaculture, and anadromous fish enhancement, initiated at local, state, and federal levels.
- 8) Discourage further growth and development in hazardous areas and preserve natural buffers throughout the coastal zone.
  - a. Restrict new development in identified V and E zones and in barrier beach, sandy beach, primary dune, and salt marsh Significant Resource Areas to the permitted uses defined under Policy 1, Marine Environment section.

- b. Condition new development in contiguous upland areas within a zone extending landward to 100 feet inland of the limit of the 100 year flood, especially within designated Areas for Preservation or Restoration, to ensure that existing hazards are not exacerbated and that the proposed uses or activities are appropriate in light of the risks of damage.
  - c. Ensure that development proposed to be located in inter-tidal areas or offshore in coastal water bodies will not exacerbate existing erosion or flooding hazards in adjacent or downcoast areas.
  - d. Encourage and support local floodplain zoning and other management of hazardous areas in all coastal towns.
- 9) Ensure that state and federally funded public works projects proposed for location within the 100 year coastal floodplain will:
- a. not exacerbate existing hazards, or damage natural buffers,
  - b. be reasonably safe from flood and erosion related damage, and
  - c. not promote growth and development in damage prone or buffer areas, especially in undeveloped areas of APR's.
- 10) Acquire undeveloped hazard prone areas for conservation or recreation use.
- 11) Provide funding and technical assistance for the restoration and stabilization of foreshore and shore areas in hazardous zones using non-structural measures.
- 12) a. Implement federal or state structural solutions to protect property and lives only when there will be widespread public benefits and minimal adverse environmental effects.
- b. Approve permits for private flood or erosion control projects only when it has been determined that there will be no adverse effects on adjacent properties or downcoast areas.
- 13) Encourage incorporation of visual concerns into the early stages of the planning and design of all facilities proposed for siting in the coastal zone. Use existing review processes to ensure that publicly funded development minimizes adverse impacts on the visual environment.
- 14) Review developments proposed near designated or registered historic districts or sites to ensure that federal and state actions and private actions requiring a state permit respect their preservation intent and minimize potential adverse impacts. Encourage use of local zoning, land use controls, and tax incentives to improve visual access and the compatibility of proposed development with existing community character.
- 15) Expand visual access in urban areas and provide views of coastally dependent activities with significant educational or interest value.
- 16) Encourage scenic river, scenic highway, and scenic road designation in the coastal zone and support designation of Areas for Preservation or Restoration as "Sign Free Areas."

- 17) Encourage maritime commerce and related development in port areas. Prohibit pre-emptions of present and proposed maritime-dependent industrial uses. Permit non-maritime-dependent industrial uses which do not represent an irreversible commitment of sites and which do not pre-empt foreseeable maritime-dependent industrial uses.
- 18) Promote the widest possible public benefit from port and harbor and channel dredging and ensure such proposals are consistent with marine environment policies.
- 19) Encourage, through technical and financial assistance, the expansion of water-dependent uses in port areas and developed harbors where the risks of damage to the marine environment are minimal.
- 20) Encourage urban waterfront redevelopment and renewal in developed harbors in order to link residential neighborhoods and commercial downtown areas with physical and visual access to the waterfront.
- 21) Improve public access to coastal recreation facilities, and alleviate auto traffic and parking problems through improvements in public transportation.
- 22) Link existing coastal recreation sites to each other or to nearby coastal inland facilities via trails for bicyclists, hikers and equestrians, and via rivers for boaters.
- 23) Increase capacity of existing recreation areas by facilitating multiple use of the site and by improving management, maintenance and public support facilities. Resolve conflicting uses whenever possible through improved management rather than through exclusion of uses.
- 24) Provide technical assistance to developers of private recreational facilities and sites that increase public access to the shoreline.
- 25) Expand the physical size of existing state or local recreation facilities in regions with a high need.
- 26) Acquire and develop new sites in conjunction with transportation improvements and at a scale compatible with the social and environmental characteristics of the surrounding community(ies). Give highest priority to areas with a high need and few remaining opportunities.
- 27) Review developments proposed near existing public recreation sites in order to encourage minimization of their potential adverse impacts.
- 28) Maximize the use of existing oil terminals. For new oil terminals, ensure that environmental impacts and effects on port operations are appropriately considered.
- 29) Consider the siting of oil tank farms in areas outside the coastal zone.
- 30) Weigh the environmental and safety impacts of locating proposed coastal gas facilities at alternative sites.
- 31) Consider alternative sites, including inland locations, prior to siting electric generating facilities in the coastal zone.

- 32) Consider alternative sites, including inland locations, for refineries. For deepwater ports consider alternative coastal sites to ensure that harm to the marine environment is minimized.
- 33) In exploiting indigenous or alternative sources of energy (off-shore oil and gas, coal, solar, wind, and tidal power) and off-shore mining minimize, to the extent practicable, adverse impacts on the marine environment, especially with respect to fisheries, water quality, and wildlife, and on the recreational values of the coast.
- 34) All development must conform to existing state and federal requirements governing sub-surface waste discharges, point sources of air and water pollution, and protection of inland wetlands.
- 35) Upgrade public infrastructure in existing developed areas, assigning highest priority to infrastructure which meets the needs of urban and community development centers.
- 36) Encourage the adoption of local zoning and regulatory controls which promote clustering of new development and encourage compatibility between future growth and public infrastructure investments.
- 37) Encourage major developments conforming to CZM policies and assist developers to reach such conformance.

#### 5.4

The CZM Plan is hereby incorporated by reference into these regulations. As a part of the state environmental policy and as a part of these regulations the technical statements, definitions, maps, descriptive material, analyses of problem areas or conflicts, regional chapters, and other textual discussion supporting or applying the final CZM policies are incorporated in full in order to clarify, support, implement and elaborate upon the policies stated under 5.3

#### 5.5

All appropriate EOEa agencies and the Office of the Secretary itself shall implement this Plan and shall enforce their laws, process regulatory reviews, conduct program activities, disburse funds, construct works, supervise the construction of works, or otherwise administer their programs in the coastal zone consistently with the CZM Program except as provided by Section 5.6. In any adjudicatory hearing or other occasion when the weight to be accorded to the CZM Plan is at issue, the CZM Plan shall be dispositive, except as provided by Section 5.6

#### 5.6

No EOEa agency shall apply CZM policy where:

- (A) To do so would require them to take an action impermissible at law.
- (B) The Secretary, pursuant to the Conflict Resolution procedures of Section 6.20 et. seq., has determined that the CZM Plan is overridden by more substantial and compelling public interests.



## 5.7

All appropriate EOEa agencies shall prepare or amend their regulations, administrative procedures, standards, and criteria so as to incorporate the policies contained in the CZM plan, to the extent permissible at law. Said agencies may also enter into Memoranda of Understanding with the Secretary, and/or other appropriate EOEa agencies, in order to jointly implement this program. Such Memoranda may detail the ways in which specific programs will function; may provide for in-service training of agency staff or continuing assistance by CZM or other EOEa agencies in order to aid agencies in implementing the program; may agree to seek the assistance and direction of the Secretary in resolving any administrative or jurisdictional disputes; or may include such other matters to expedite the coordinated implementation of the CZM plan by all appropriate EOEa agencies. In order to ensure that appropriate EOEa agencies fulfill their responsibilities under this regulation and to expedite efficient and consistent administration of their laws, said agencies are encouraged to work with the CZM office and the Office of the Attorney General in order to clarify and interpret their statutory authority vis a vis the CZM Plan. Such clarifications may be incorporated into regulations, Memoranda of Understanding, guidelines or other written form.

## COMMENTARY

As explained in the Management Chapter of the CZM Plan, the discretionary authority of the EOEa agencies range from being very broad to being ministerial. The extent to which the CZM Plan, as a statement of the state environmental policy, operates to affect the decisions of the EOEa agencies is determined by reference to the scope of authority under each EOEa law. This regulation does not compel any EOEa agency to take an ultra vires action. It does require all appropriate EOEa agencies to apply CZM criteria when they take a lawful action in the coastal zone. As examples, where an agency's scope of discretion is very broad, and it can balance the public good vs. the private good, it can determine that a heavy industrial facility may not be placed next to a public recreation area. Where an agency has been directed to specifically protect an area for its flood damage and fisheries values and where the CZM Plan and the standards of the HUD Flood Insurance Program would call for structures to be placed on pilings, then these conditions can be imposed. However, if aesthetic concerns are not addressed by the enabling statute, then the agency could not require that the structure be painted in earth-tone colors rather than red, white and blue stripes. Further, if the CZM maps erroneously show an area to be a marsh, when in fact it is not and to follow the CZM Plan would then be an unlawful exercise of jurisdiction, this exception allows agencies to make such minor deviations from the letter of the CZM Plan. As is laid out in the Performance Evaluation Section 8.0, one of the issues to be addressed by that evaluation process will be whether or not the agency consulted with the CZM Office prior to determining to proceed with an action inconsistent with the CZM Plan, allegedly because acting consistently with the Plan would have been impermissible at law.

5.8 A) Regional Advisory Councils on Coastal Resources shall be established by the Secretary. Such Councils shall be composed of a representative from each town in the coastal zone who shall be appointed by the local Board of Selectmen or the city mayor and representatives of regional user groups who shall be appointed by the Secretary.

B) The Regional Advisory Councils shall generally advise the Secretary on the CZM Program as it is implemented in the region. Additional functions may include:

- 1) Annual Review: The regional Councils may annually review and report to CZM on the applicability of the respective regional chapter, and up-date where necessary.
- 2) Quality Control: The regional Councils may help to insure overall quality control in the CZM Program. The Councils may review on a periodic basis the state's regulatory and management programs as they relate to their respective region, for quality and consistency with the CZM Plan.
- 3) Observation: The regional Councils may serve as local contacts within the region, alerting the regional environmental engineer and state CZM administrator of problems and issues in the region.
- 4) Priority Setting: The regional Councils may advise in the setting of priorities in the allocation of technical-assistance funding for the region, should requests for funds exceed available supplies.
- 5) Conflict Resolution: The regional Councils may serve as a forum for discussion and a central point for the collection of information and ideas, should problems or conflicts occur between communities.
- 6) Monitoring: The regional Councils may monitor the coordination of activities by local, state and federal government programs in the coastal zone.

5.9 A) The Governor's Advisory Council on Coastal Resources shall be established by the Governor by Executive Order. The membership of the Governor's Advisory Council shall not be geographically representative but shall include statewide user groups, both coastal and inland, who shall be appointed by the Governor.

B) The Governor's Advisory Council shall generally advise the Governor and the Secretary on the CZM Program as it is implemented statewide. Additional functions may include:

- 1) Advisory and Planning: This group may advise the Director of the CZM Office and the Secretary of Environmental Affairs on the implementation of the CZM Program. As planning will continue on erosion problems, recreation, and various aspects of outer continental shelf oil and gas exploration and development, this group may help to evolve state planning efforts.
- 2) Quality Control: This group may work with the CZM Director on a periodic review of environmental regulatory and management functions to insure adequacy and consistency in the application of CZM policies.
- 3) Priority Setting: This group may advise the CZM Director and the Secretary of Environmental Affairs on the setting of priorities for CZM funding to locales and state agencies, and for overall program objectives and goals.
- 4) Education: This group may work to ensure development of long term education programs to foster a state coastal ethic.

- 5) Management: This group may review the CZM program on an on-going basis, and recommend changes to the Secretary of Environmental Affairs. This group may advise the Secretary on questions of amendments to the CZM program.
- 6) Review: This group may perform for the Secretary an annual independent review of the CZM program.

COMMENTARY

The functions of the Regional and the Governor's Advisory Councils has been taken from the discussion of "Continuing Public Involvement in Implementing the CZM Plan" in the Management Chapter. As review of the Plan itself proceeds, these provisions may be revised; the regulations will then be revised accordingly.

Please refer to the definition of user groups in Section 3.0 of these regulations.

## 6.0 Procedures for Actions in the Coastal Zone

6.10 Role of EOEa Agencies - The appropriate EOEa agencies shall be the primary agencies responsible for the implementation of the CZM plan. Except as provided by this regulation, actions conducted by appropriate EOEa agencies shall follow the standard procedures established by those agencies, including any modification in those procedures to incorporate the CZM program. Requests for permits, state funding (non-CZM funding), etc., should thus be addressed to the appropriate EOEa agency and not to the CZM Office.

## 6.20 Resolution of Conflicts

6.21 Whenever an administrative or jurisdictional conflict exists between and two (or more) EOEa agencies, or where programs are jointly administered by the request of an agency, the Secretary has the power and duty to resolve such conflicts under Chapter 21A, Section 4.

6.22 Instances in which resolution may be appropriate include:

- a) Subject matter jurisdictional conflicts.
- b) Actions by one agency affecting the scope and interests or concerns of another agency.
- c) Laws or programs having inconsistent criteria and requiring inconsistent outcomes.
- d) Issues as to how to enforce a particular law or program.
- e) Questions about how funding should be allocated.
- f) Questions about how priorities should be established for agencies or programs.
- g) Issues as to the interpretation or application of a policy adopted by the Secretary, whether as applied to a particular site or as contrasted with another policy; specifically for the coastal zone, whether or not a proposed EOEa action is consistent with the CZM Plan.

### COMMENTARY

Section 6.22(a) intends to encompass situations where two laws each give agencies responsibility for some action or area.

Section 6.22(b) addresses situations where an action by one agency could have the potential for undercutting, interfering with, duplicating, or being inconsistent with, the actions or programs of another agency. It is sufficient just that another agency have expertise or concern in an area; it is not necessary for both to have regulatory powers. For example, if one EOEa agency has been funding a shellfish management program in an area, it would be inconsistent for another EOEa agency to dredge these beds. Rather than have both agencies continue to pursue their own course, this mechanism is designed to enable the Secretary, with appropriate public input, determine the best course for state actions in that area.

6.23 Initiation of Conflict Resolution Mechanism: When any EOEa agency feels that a conflict may exist with another EOEa agency regarding an action in the coastal zone, that agency shall communicate its concerns to the Secretary or her designee. An issue identification session shall be arranged.

6.24 An issue identification session shall be held informally but shall include the appropriate administrators for all affected EOEa agencies. The Secretary shall name the affected EOEa agencies. If the action is in the coastal zone but CZM was not an objecting agency, it shall be presumed to be an affected party, but may withdraw upon its own evaluation of the conflict.

The purpose of the session is to clarify issues, isolate matters of concern, resolve matters of concern, and to re-evaluate the positions of the agencies, and to informally resolve the conflict.

6.25(a) If it is determined that a conflict does exist, a formal statement of issues may be prepared, based in part or in full upon material presented at the issue identification session. The statement shall set forth the matters to be resolved by the Secretary. The Secretary, at her discretion, shall then take such actions as may be appropriate to resolve the conflict, except when Section 6.26 applies. If the Secretary determines that it shall be appropriate to call a public hearing, a formal statement of issues shall be prepared, notice shall be sent to those persons or agencies listed in Section 6.26(b) and the procedures of Sections 6.26(c), (d), and (e) shall be followed.

6.26 In all cases when the legal rights, duties or privileges of specifically named persons are to be determined, such persons have a right to request a hearing and any ten citizens of the Commonwealth have the right to intervene in such hearing. In such cases, the following procedures shall apply:

a) The named person shall be informed by the Office of the Secretary that following initial review (Section 6.24) by the appropriate EOEa agencies, it was determined that a conflict exists concerning the proposed action. The named person shall be informed as specifically as possible of the nature of the conflict, that the Secretary of Environmental Affairs will resolve the conflict, and that he/she has a right to request a formal adjudicatory hearing. If the Office of the Secretary does not receive a request for a hearing within twenty (20) days of the mailing of such notice to the specifically named person, then that person will be deemed to have waived his/her right to a formal hearing and the Secretary shall proceed to resolve the conflict pursuant to Section 6.25.

b) Should the specifically named person request a hearing, notice of the hearing shall be issued by the Office of the Secretary. It shall be included in the 62-Monitor, sent to the specifically named person, and to any town planning board, conservation commission, other agency, or interested individuals as the Secretary may deem appropriate.

c) The notice shall include a formal statement of issues, based in part or in full upon material presented at the issue identification session. It may also include a call for more information. It shall name the time and place of the hearing. It shall also specify the means that members of the public may use to submit their views. The hearing may not occur less than twenty-one (21) days following publication of notice in the 62-Monitor.

d) A conflict resolution hearing shall be a management program decision pursuant to Section 6.60 et. seq. of these regulations concerning local government consultation. No statement of findings shall be issued by the Secretary less than thirty-seven (37) days of the publication of notice in the 62-Monitor, unless local governments comment or indicate that they waive their right to comment before thirty-seven (37) days have elapsed.

e) The Secretary shall issue a statement of findings following the hearing which shall be published in the 62-Monitor and sent to the persons and agencies identified under Section 6.26(b).

6.28 Whether the issue is resolved under the procedures of Section 6.25 or 6.26, the following shall apply:

- a) By virtue of Section 5.5 of these regulations and by the requests of EOEAs to the Secretary to jointly implement the coastal zone management program, the CZM policies are binding upon the Secretary and the EOEAs except:
    - (1) when they would call for an action beyond that permissible at law, or
    - (2) when the Secretary, pursuant to these procedures has determined that there are more substantial and compelling public interests or concerns which override the CZM policies.
  - b) Following the resolution, agency actions shall be consistent with the findings of the Secretary.
  - c) The Secretary, at her discretion, may call for further information in the form of an environmental impact statement, or limited environmental impact statement.
- OR
- c) The conflict resolution process (or just 6.25??) shall not be considered an action which may have a significant effect on the environment, as that MEPA determination has already been made.
  - d) If the Secretary finds contrary to the CZM Plan and a statement of findings has not been prepared because there was no hearing, the Director of Coastal Zone Management may request written reasons from the Secretary as to why, under 6.28 (a) 1) or 2), CZM policies were not applied.

COMMENTARY

The authority of the Secretary to resolve conflicts stems from Chapter 21A, Section 4(1). In addition, the Memoranda of Understanding with the Commissioners triggered Section 4(2) of 21A which enables the Secretary to jointly implement the CZM Program by their request.

While this authority and these procedures could be applied to any issue arising within the Secretariat, these regulations are limited to resolving issues arising under the coastal zone management program. Since the Secretary and the agency administrators have all agreed to implement the program (except where it would be impermissible at law or where the Secretary finds a more compelling public interest), the central issue at these sessions will be what course of action is consistent with the Plan. If the Plan's policies are themselves contradictory, then the Secretary shall determine which policy should prevail. The Plan will not be followed where the Secretary finds more substantial and

compelling public interests or concerns that would be jeopardized by the application of CZM policy. The authority to perform this balancing is left with the Secretary, to insure that the Plan does not lead to an arbitrary or capricious result. This balancing is purposely not placed with the line agencies in order to insure that any departure from CZM policies is made in a visible, public and fully accountable manner and by the administrator ultimately responsible for the program.

It is also anticipated that many issues will be resolved pursuant to Section 6.25 because they will involve internal administrative issues, such as priority areas for agency action, or divisions of responsibility among programs, and not permit decisions.

6.30 Hearings Conducted by EOE A Agencies - CZM or its designees shall have the right to be notified in advance of all hearings conducted by EOE A agencies regarding any action within the coastal zone, affecting the coastal zone, or otherwise affecting any of the policies of the CZM plan, in order that CZM may appear as an expert witness, may intervene as an interested party, or may otherwise submit its comments on the EOE A action.

6.31 Unless otherwise expressly forbidden by law, CZM shall have the right, where a right of appeal or hearings exists for other interested parties or permit applicants, to request an appeal or hearing of any action taken by an EOE A agency regarding an action within the coastal zone, affecting the coastal zone, or otherwise affecting any of the policies of the CZM plan. CZM shall, in all cases, be bound by the procedures of the EOE A agency.

#### COMMENTARY

These sections make clear that CZM shall have the right to intervene in EOE A agency hearings or standing to request a hearing whenever EOE A agencies are taking actions within or affecting the coastal zone. The intention of these sections is to integrate the CZM program directly into existing EOE A procedures and thus to obviate resort to the conflict resolution mechanisms.

6.40 Procedures for Designation of An Area of Critical Environmental Concern within the Coastal Zone - The following procedures shall apply to the process for designating Areas of Critical Environmental Concern within the coastal zone, pursuant to Chapter 21A, Section 2(7) charging the Secretary and the EOEa agencies to develop statewide policies regarding the acquisition, protection and use of Areas of Critical Environmental Concern to the Commonwealth.

6.41 Purpose - This section is promulgated in order to implement Chapter 21A, Section 2(7) for the coastal zone and to comply with the requirements of the federal CZMA.

COMMENTARY

Section 306(B)(9) requires that the CZM plan contain procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreational, ecological, or aesthetic values. The CZM plan, with the advice and suggestion of the Citizen Advisory Groups contains ten nominated areas. These are indicated on the CZM maps in blue. Pursuant to the procedures outlined in this regulation, the Coastal Zone Management office will nominate these areas to the Secretary of Environmental Affairs for her consideration and possible designation as Areas of Critical Environmental Concern. Once an area has been designated, the effects of such designation are described in Section 6.51. For federal purposes, all areas appearing on the CZM maps as nominations for Areas of Critical Environmental Concern are also nominations for Areas for Preservation or Restoration (APR's).

6.42 Nominations for Designation The Secretary shall consider designating an Area of Critical Environmental Concern within the coastal zone upon a nomination by:

- a. any ten citizens of the Commonwealth;
- b. by the Board of Selectmen, the town Planning Board, or the Conservation Commission of any town which would be affected by the designation;
- c. by any unit of EOEa; or
- d. by other state agencies, Regional Planning Agencies, the Governor, or a member of the General Court.

6.43 Nominations: Nominations should include summary information regarding the resources of the area; a suggested boundary of the area; and a general description of advantages that would be achieved through designation and subsequent management of the Area. The nomination shall include a map of the area on a USGS quadrangle sheet

6.44 Areas eligible for nomination as Areas of Critical Environmental Concern within the coastal zone shall include at least 5 of the following resources or coastal characteristics:



- a. barrier beach system: a narrow low-lying strip of land composed of unconsolidated material extending roughly parallel to the general coast and either completely or partially separated from the mainland by a narrow body of fresh, brackish or saline water or marsh system. Barrier beaches are dynamic landforms that are presently migrating landward in response to rising sea level. They serve as a buffer to protect landward public and private property and natural areas from the force of storms and coastal flooding. In addition, barrier beaches provide valuable natural habitats and function as natural dynamic systems that change in response to coastal processes (erosion and accretion, storm overwash, and dune development).
- b. dune: any low hill, mound, or ridge of sand deposited by wind action or storm overwash or by artificial means for shoreline protection. Dunes extend from the beach landward to the end of beachgrass vegetation or the end of the topographic expression.
- c. beach: the gently sloping shore of a body of water consisting of unconsolidated material subject to wave, tidal, and coastal storm action. Beaches extend from the mean low water line to the duneline, beachgrass line or to the seaward edge of existing man-made structures.
- d. salt marsh: high marshes are low-lying coastal wetlands characterized by the presence of Spartina patens. These marshes are flooded by seasonal high tides. Low saltwater marshes are areas vegetated by Spartina alterniflora. This land is submerged by normal tides.
- e. shellfish beds: areas of bottom which, in combination with other environmental factors, favor the establishment and reproduction of harvestable shellfish; blue mussel, oyster, quahog and soft shell clams, bay scallops, sea clam, and ocean quahog. Bottom areas with associated Zostera marina serve in places as bay scallop nurseries.
- f. salt ponds: a shallow enclosed or semi-enclosed bay of saline water formed as the result of glaciation or barrier beach formation at the mouth of a shallow bay. Salt ponds are subject to fresh water influence from small streams emptying into the upper reaches of the pond or springs along the periphery and/or in the pond itself. Salt marsh vegetation usually forms a fringe around the pond.
- g. estuary: semi-enclosed body of water which has a free connection with the open sea within which sea water is measurably diluted with fresh water derived from outflowing fresh water rivers. In most instances, the landward extent of the mixing of fresh and salt water is shown by the presence of salt water marshes which form along the banks of the river.
- h. coastal embayments: marine waters that have a restricted opening to the ocean due at least in part to the formation of a barrier beach. Unlike estuaries or salt ponds there is very little fresh water influence. Coastal embayments are shallow and may support healthy stands of eel grass and populations of shellfish. Most coastal embayments support well developed salt marsh systems.

- i. anadromous fish runs: areas within estuaries, streams, bays and coastal waters which are spawning or feeding grounds for anadromous fish.
- j. flood plains: coastal lands located within the 100 year flood zone. If they have been completed, town Flood Insurance Rate Maps prepared by HUD under the National Flood Insurance Program delineate A zones (areas subject to 100 year floods) and V zones (areas within the 100 year tidal flood zone that are subject to storm wave impact).
- k. erosion: areas where there is a loss of land along the shoreline caused either by natural forces or by the action of man. "Critical" erosion is typically defined to mean erosion of shorefront property that causes it to become unusable or imminently rendered unusable. Critical erosion is evidenced by a loss in significant recreational beach benefits, a significant loss in other public lands or facilities, significant damage or destruction of private property, or significant change in the morphology of conservation land.
- l. areas of accretion: new land or shoals that are being formed along the coast due to the deposition of silt and sand by the littoral drift.
- m. coastal view points: high points or promontories which provide views of shore lands, coastal waters, and activities occurring there.
- n. individual sites of visual importance: includes man-made sites of historic, archeological, architectural, or cultural value listed on the National Register of Historic Places. In addition, natural features designated as SRA's are presumed to have inherent scenic attributes important to the natural coastal landscape, and areas designated as Port SRA's are presumed to have visual attributes important for their interest and educational value.
- o. recreational beaches: suitable, sandy beaches with adequate access which provide recreation opportunities for a region-wide public.
- p. boating facilities: public ramps, moorings, and marinas which provide public access and opportunities for coastal boating and fishing.
- q. coastal related recreation: trails, campgrounds, bike routes, etc. which provide access to the shoreline or are complementary to the shoreline recreation because of their physical proximity or functions.

COMMENTARY

The reason that an area must contain at least five of the listed characteristics is that these areas must be of statewide importance. This threshold was established in order to insure that just areas with a criticality and value greater than local concern were evaluated. Secondly, since these areas are being designated because of their environmental criticality and in order to preserve or restore them (as opposed to other special CZM areas where development is encouraged), these areas must have a very high number of natural attributes. It is not the intention of the designation to remove these areas from public enjoyment or use. Areas which have recreational, historic or scenic attributes are welcomed nominations. Human activities which can be conducted consistently with the criticality of the area are encouraged. A basic function of this designation is to coordinate and focus EOEAs programs (such as water pollution control, acquisition, wetlands, MEPA, CZM, etc.) with federal programs and to encourage local agencies to act consistently with the state's concern for their valued resources.

6.45 Further Information: The Secretary, at his/her option, may request such information from the party nominating the area or from other sources as would assist in making the finding set forth in Section 6.50.

6.46 Review of Nominations: The Secretary shall evaluate the nominations and may decide either to decline to designate the area or to proceed with a full review of the nominated area. The Secretary shall inform the nominating party of the results of this decision within 45 days.

6.47 Public Notice/Public Hearing: Before designating an area, a public hearing must be held. Public notice shall be published by the nominating party no less than thirty days before such hearing.

Notice shall be published in a newspaper of general circulation and any appropriate trade, industry, informational, or professional publications. Notice shall be mailed to the appropriate town or city halls, planning boards, conservation commissions, and any interested citizens or organizations which have come to the attention of the Secretary. It shall also appear in "The Environmental Monitor." Wherever possible, the hearing must be held within twenty-five miles of the area nominated or the nearest location where a suitable facility exists.

Notice shall include a citation of the authority under which the designation would occur, a summary of the reasons proposed for such designation, a map of the area to be designated, the time and place of the hearing, and the method by which members of the public may make their views known.

#### COMMENTARY

The State Administrative Procedures Act does not require holding a public hearing in situations such as the designation of a Critical Area. However, consistent with the high level of public involvement in the development of the CZM Program, the requirement for a public hearing is being imposed by regulation.

6.48 Designation The Secretary shall consider the following factors in deciding whether or not to designate an area. These factors need not be weighed equally, nor need they all be present in order to designate an area. However, areas which possess many significant resources (as listed in Section 6.44), fulfill a high number of the following factors, or which are exceptionally important in terms of one of the following factors, may be given priority relative to other nominations.

Public Health - Use of the area potentially threatens the public health, safety, and welfare in the form of: pollutants to the water supply; pollutants introduced indirectly through the food chain; landform alterations which adversely affect land stability and/or natural protection; existing natural hazards; other direct or indirect effects which vary with the potential uses.

Quality of the Area - The area possesses outstanding natural characteristics such as: existing or proposed Class A or SA water; undeveloped or unaltered land and water; healthy indigenous vegetation.

Productivity - The area is unusually rich in nutrients serving as a food source for and hosting a high diversity of finfish, shellfish and waterfowl. Productivity is high in areas of healthy salt marsh grasses, optimal salinity and temperature regimes, and favorable circulation patterns.

Uniqueness of Area - The area is unique or unusual from a regional or national perspective, and potential land use impacts are consequently more serious. Uniqueness will apply to: endangered plant and animal species; geologic features; archeological/historic/cultural features; other resources of educational value.

Irreversibility of Impact - The area has resources or characteristics which are potentially exhaustible or so fragile that alterations may have irreversible consequences. Irreversibility of impact will be assessed based on the proposed activity and the sensitivity of resources such as: dependence of natural systems on groundwater; tolerance of animals and habitats to pollutants; degree of interdependence of ecosystems; and delicacy in salinity balance.

Imminence of Threat to the Resource - Potential impacts on the area are imminent, based on: major project(s) currently proposed; quantity of approved subdivisions; major public plans for new infrastructure such as sewer, water, roads.

Economic Benefits - The area has intrinsic values which are important to a region's economic stability. Such values include: recreation, tourism, fisheries development; and water supply.

Supporting Factors - The area has other supporting factors which facilitate preservation or restoration. Such factors include: strong public consensus on the intrinsic value of the area; legislative identification of the value of the resource; public awareness as an important area; the area is contained within more than one town and local control is not coordinated; ownership of some or all of the resource by local, state, regional, or federal government; the existence of supplementing management programs in the area.

#### COMMENTARY

These factors are provided in order to focus the scope of the Secretarial inquiry into the value of the area. While the more factors that an area possesses may well influence the need for its designation, the strong presence of any single factor (for instance public health or an imminent threat to the resource) may well give an area greater priority for immediate Secretarial attention.

6.49 Secretarial Finding - Based upon the review of the factors listed in 6.48 and the information presented by the nominating party at the public hearing, or from other members of the public and state agencies in order to designate a Critical Area of Environmental Concern in the coastal zone, the Secretary shall find that the area is one in which an otherwise insignificant impact could become significant.

6.50 Effect of the Designation - The designation shall have the following effects: (1) Pursuant to part 6.0 et. seq. of this regulation, all appropriate EOEA agencies shall take actions, administer programs, and/or revise regulations consistently with this regulation, except as described by Section 5.6, in order to have consistent EOEA policies regarding the acquisition, protection, and use of areas of critical environmental concern to the Commonwealth. (2) All state agencies, offices, departments, etc., outside of EOEA, and entities apart from the state government, are unaffected by the designation except insofar as

the Massachusetts Environmental Policy Act of 1972, as amended, other EOE law, or the federal consistency provisions, shall apply. Under the various regulations promulgated pursuant to MEPA, no project conducted or permitted by any state agency shall qualify for a categorical exemption if it would be located in an area of critical environmental concern. (3) For federal purposes, any area which has been designated by the Secretary as an Area of Critical Environmental Concern, or is still under nomination for such designation and lies, in whole or in part, within the coastal zone shall be considered an Area for Preservation or Restoration (APR) as described in Section 306 (c)(9) of the CZMA and 15 CFR 923.16. Pursuant to Section 307 (c) of the CZM and 15 CFR 930, no federal agency shall conduct, support, or permit any activity in the coastal zone which is inconsistent with the designation.

The standard procedures for reviewing federal actions and issuing certification statements prepared by applicants as outlined in part 7.00 et. seq. of these regulations or statements of consistency of federal grant awards and direct actions prepared by federal agencies shall apply to designated Areas of Critical Environmental Concern/Areas for Preservation or Restoration. The state CZM office will conduct such reviews and issue its concurrence only when consistent with the "purpose of preserving or restoring such areas for their conservation, recreational, ecological, esthetic values."

6.51 Timing of Order - The Designation Order shall not take effect until thirty-seven days have elapsed from the date of the publication of the notice required by Section 6.47 unless local governments have indicated that they waive their rights to comment or have presented their views at the public hearing. The Secretary may stay the effect of the Designation Order for a longer period.

#### COMMENTARY

The timing of the Designation Order, when combined with the requirements of local government consultation provisions and the state Administrative Procedures Act mean that the Order may not take effect for 7 days after the hearing if it is held 30 days after notice, decreasing to taking effect immediately if the hearing is held 37 days or more after public notice.

6.52 Mid-stream Projects - All projects which have already filed an application with any EOE agency or have received a notice that an action will not require the filing of an Environmental Assessment Form or Environmental Impact Statement will be unaffected by the Designation.

#### COMMENTARY

Any federal action (direct, permit or license or assistance) will be unaffected by the Designation because all federal actions must be consistent with the CZM plan, even while the areas are pending designation.

6.53 Review of Designations - Every four years the Secretary may review the designations to evaluate the continuing need for such designations and whether the designation should be continued, amended or repealed.

6.54 Effect of Regional Chapters - The Secretary and the units within EOEa shall refer to the regional chapters of the CZM plan, which were prepared by the Citizen Advisory Groups, as guidance in deciding whether to designate an area and as guidance in the conduct of their activities in those areas, once designated to the degree that they reflect the policies of the plan as applied to the region.

6.60 Continuing Consultation Mechanisms with Local, Regional and Inter-State Agencies, and Other State Agencies - These provisions are promulgated in order to insure continuing local participation in the implementation of the CZM program and to meet other federal requirements.

COMMENTARY

This part promulgated is pursuant to sub-sections 23, 16, and 18 of Chapter 21A, Section 2 which call for EOEAs to "advise and assist local governments, private and public institutions, organizations, and associations, businesses, industries, and individuals by providing and acting as a clearinghouse for environmental information, data and other materials;" to "assist other state and regional agencies in developing appropriate programs and policies relating to land use planning and regulation in the commonwealth;" and to "advise, assist, and cooperate with such other departments, agencies, authorities, officials, and institutions... as may be concerned with or involved in matters under their control or supervision;" and Section 306 (c)(2)(b) of the CZMA, as amended, which calls for the CZM plan to establish "an effective mechanism for continuing consultation and coordination between the management agency... and local governments, interstate agencies, regional agencies and areawide agencies within the coastal zone to assure the full participation of such local governments and agencies in carrying out the purposes of (the Coastal Zone Management Act)." These federal regulations for this section appear at 15 CFR 923.42.

6.61 Notice to CZM by EOEAs - 60 days before any EOEAs agency or other state agency implementing the CZM plan shall implement a management program decision, as listed under Section 6.64, it shall send a notice of such decision to CZM.

6.62 Notice by CZM - Upon receipt of such notices from EOEAs agencies, or pending any management program decisions by the Office of the Secretary, CZM shall publish notice of such in the Monitor.

COMMENTARY

Regional, areawide, interstate and other state agencies which are not local governments (see definitions) and members of the public are urged to utilize the public notice function of the Monitor in order to comment to the state agency on proposed management program decisions.

6.63 Procedures in Lieu of Section 6.61 and 6.62 - If an agency already has procedures for public notice of its actions it may enter into a Memorandum of Understanding with the CZM program to meet the 6.61 and 6.62 procedures through some alternative mechanism. In order to enter into such a Memorandum, the Secretary or the Director of the Coastal Zone Management Office must find the alternative mechanism as effective in notifying the substantially similar audience as CZM's publication in the Monitor.



## COMMENTARY

Since the Monitor will be used as the key information vehicle concerning state and federal actions in the coastal zone, existing forms of notice required of other agencies (such as publication in the newspaper) may not in fact be as effective as publication in the Monitor. But, in order to minimize the burden on agencies, CZM is open to alternative suggestions as long as the local governments do receive effective notice.

6.64 Management Program Decisions - Shall be major state policy and plan implementation actions and shall include the proposal to:

- (a) adopt Coastal Wetlands Restriction Orders by the Department of Environmental Management.
- (b) the Designation of an Area of Critical Environmental Concern in the Coastal Zone by the Secretary of Environmental Affairs.
- (c) designate scenic rivers by the Department of Environmental Management in the coastal zone.
- (d) take by eminent domain by any EOEA agency of any land within the coastal zone,
- (e) purchase by any EOEA agency of any lands in the coastal zone without taking eminent domain action.
- (f) adopt regulations by any EOEA agency relating to the implementation of the CZM program.
- (g) amend the CZM plan.

Management program decisions do not include individual permit or regulatory actions, issuance of grants by EOEA agencies, or construction programs carried out by EOEA agencies.

6.65 Content of Notice - The notice shall provide that the local government may, within the 30-day period commencing on the date of receipt of the notice, submit to the EOEA agency with a duplicate to CZM written comments on such management program decisions and any recommendation for alternatives thereto. The notice shall further state that in order to enable the state to proceed without unnecessary time delay, local governments are encouraged to forward to the state agency and CZM a written statement of its desire to waive its rights to comment, of its concurrence with the management program decision, or of actions it intends to take which conflict or interfere with the management program decision. In all instances, if no written comments are received from the local government within thirty-seven days of the publication of the notice in the Monitor, the local government will be presumed to have waived its right to comment.

6.66 State Agency Procedures -

A) All EOEA agencies which receive comments from local governments shall consider such comments before proceeding with the management program decision. The EOEA agency may decide to hold a public hearing, if the notice did not

also include a notice for a hearing. Unless the EOEa agency has received a written statement from the local government indicating its desire to waive its rights to comment, its concurrence with the proposed decision, or its intention to proceed with an action which would conflict or interfere with the management program decision, the EOEa agency must not proceed with the management program decision until thirty-seven days have elapsed from the date of publication in the Monitor.

B) To insure that the state agency has considered the local comments it shall provide a written response to the local government within a reasonable period of time following the receipt of the local comments. Such response may include a discussion of the information presented for the state agency's consideration at the public hearing, if the initial notice also called for such a hearing; whether or not the agency has decided to hold a hearing if it had not originally planned on doing so; other factors, laws, or constraints, or the views of other affected local bodies, members of the public, or other agencies which the agency has also taken into account in reaching its decision; modifications in the proposed decision which have been made in light of public comments, including those made by the local government; and whether or not the state agency is staying the implementation of its decision for more than the thirty-seven days from publication in the Monitor in order to receive or consider further public comment.

#### 6.67 Local Government Procedures -

A) Local governments may use this comment mechanism to inform the state whenever proposed decision conflicts with existing zoning ordinances, variances, special exceptions, master plans, or official maps. Local governments shall decide whether or not the proposed decision conflicts with the above-described documents but a conflict may exist only where the state decision is incompatible with or contradictory to such ordinances, and not where the state decision consists of additional or different requirements.

B) Where a local government takes an action during the comment period which conflicts or interferes with the proposed management decision, it forfeits its rights to comment on the proposed state decision and to request a public hearing. Local governments are urged to notify the state agency of such actions in writing.

#### COMMENTARY

This section parallels the federal regulations.

6.68 - EOEa agencies shall attempt, through informal consultations, public hearings, additional studies, environmental impact statements, or other appropriate measures, to resolve conflicts with local governments. State agencies shall, however, act consistently with their responsibilities towards all citizens of the Commonwealth in providing uses or services for regional and statewide benefit and shall act consistently with their existing legislative mandates.

## 7.00 Federal Consistency Procedures

This part establishes procedures and policies to be utilized by EOEAs, agencies and CZM for implementing the Federal Consistency provisions of the Coastal Zone Management Act of 1972, as amended.

### COMMENTARY

The Federal Act establishes the national policy that all actions by federal agencies -- federal licenses or permits, federal assistance, or activities or projects undertaken by the federal government -- be consistent with approved state coastal zone management programs. The procedures to be followed by the states and federal agencies are not yet final, as the Federal Office of Coastal Zone Management does not yet have final regulations promulgated for this area. Therefore, these regulations are subject to change to bring them into consistency with the final federal regulations.

Secondly, since this is the first time that the federal government has sought, in such a widespread effort, to coordinate its activities and procedures with those of states, it may require a period of trial and error in order to effectively coordinate the procedures of both levels of government.

As is explained in Part III of the Management Chapter, the goal of CZM will be to expedite concurrent processing of applications by state and federal governments, to hold joint public hearings or site visits, and to make all relevant parties (the applicant, the federal agencies, other EOEAs) aware of how much scrutiny CZM will need to apply in order to determine the consistency of any project with the Plan.

7.01 Adoption and Incorporation of Federal Consistency Regulations

These regulations hereby adopt and incorporate the Federal Consistency Regulations promulgated by NOAA, including future amendments thereto.

COMMENTARY

The Federal Consistency portion of these Regulations (Section 7.00 et. seq.) are promulgated to describe the procedures which will be used in Massachusetts for the implementation of the Federal Consistency requirement. In many cases, these regulations closely parallel the language of the federal regulations. In other places the procedures unique to Massachusetts CZM are described. The federal licenses and permits provisions (Sections 7.10 - 7.29) are the most detailed because it is expected that many private citizens who may not have access to the federal regulations will use these regulations only. Once the federal regulations are published in a more compact form (they are now 109 pages long) CZM will have copies available for distribution. The provisions herein relating to direct federal actions and federally funded assistance, OCS leasing and the conflict resolution procedures are not as detailed, based on the assumption that federal agencies and anyone involved in the OCS leasing or a dispute with CZM will refer to the federal regulations anyway.

#### 7.10 Procedures for Activities Requiring a Federal License or Permit

(a) When an applicant applies to an EOE agency for a permit, and that action will also require one of the federal permits listed below, the EOE agency will refer to the coastal zone maps to locate the action. Should the action be located whole or in part within the coastal zone, the EOE agency will inform the applicant that he will have to file a consistency certificate with CZM.

(b) The licenses and permits which must receive a consistency certificate are:

U.S. Army Corps of Engineers: Section 404, Federal Water Pollution Control Act, permit for discharge of dredged or fill materials in navigable waters; Section 10, River and Harbor Act of 1899, permit for obstruction or alteration in navigable waters of the United States; Section 103, Marine Protection, Research, and Sanctuaries Act, permit for transportation of dredged material; Section 4f, OCS Lands Act, permit for artificial islands or fixed structure on OCS. U.S. Coast Guard: Permit for construction or modification of bridge structures across navigable waters of the United States; Deepwater Port License. Environmental Protection Agency: National Pollution Discharge Elimination System (NPDES) permit; Ocean dumping permit (authority exercised jointly with Army Corps of Engineers. Department of Interior: Permits for pipeline rights of way for oil or gas transmission on Outer Continental Shelf; Permits for licenses for drilling and mining on the Outer Continental Shelf; Permits and approvals of exploration and development plans pertaining to the extraction of leasable minerals; Permit for approval of platform installations. Federal Power Commission: Permits and licenses for planning, construction, and operation of non-federal hydroelectric power developments; Certificates authorizing natural gas pipelines to construct, extend, acquire or operate transportation and storage facilities for transport of natural gas in interstate commerce; Authorization for import or export of natural gas; License for construction and operation of nuclear power plant.

#### COMMENTARY

Since no federal agency for the programs listed above will be able to issue a permit or license without CZM concurrence, should any applicant apply to that agency (either before it applies to the state or because there is no state permit involved) the federal agency will inform the applicant that it must first file a consistency certificate with CZM.

7.11

The consistency certificate shall seek information on the type of action proposed, the scale or size of the action proposed, the scale or size of the action, whether any public funds are involved or are sought and the location of the action. The action shall be located on a map of suitable scale. The applicant shall also identify the proximity of the action to APR's, SRA's, and SADA's and what CZM policies are affected.

COMMENTARY

There will hopefully not be a need to create a new form for the consistency certificate; where possible existing DEQE or MEPA forms will be used, with the addition of a few questions. Applicants are urged to consult with CZM or the EOEa agency in order to fill out the statement.

7.12

All applicants for a DEQE permit or license who will also need to obtain a federal permit or license shall file their consistency certificate at the time of application to the DEQE agency. DEQE staff shall inform applicants of the requirement. DEQE shall then forward all certificates to CZM. DEQE shall proceed with its review.

7.13

All applicants for federal licenses or permits which will not require a state license or permit and which are listed under 7.10, or are notified pursuant to 7.19 shall be filed directly with CZM.

7.14

Upon receipt of the consistency certificate, CZM shall publish notice in the 62-Monitor which shall include a summary of the proposed action and its location. The notice shall include a request for comments to be submitted to CZM by a specified date.

7.15

Within 10 days of receipt of the consistency certificate, CZM shall determine which of the following categories the proposed action falls into:

- A) The action proposed is one expressly permitted by the CZM plan, does not raise issues of concern to CZM, or is otherwise consistent with the plan.

- B) The action, either due to its type, scale, location, or design, is one which requires a site visit, technical review, or the submission of more detailed information in order to evaluate its consistency with the plan.
- C) The action requires a case-by-case analysis in order to determine its consistency with the plan.
- D) The action would entail the use of federal or state funds and thus potentially involve other federal consistency procedures or CZM policies and possibly duplicate or result in inconsistent federal consistency determinations.
- E) The action would entail other EOEAs permits and therefore potentially involve duplicate and possibly inconsistent federal consistency determinations.
- F) The action is an application from a state agency for a license and therefore requires either intra-EOEA coordination, inter-agency coordination, or a potential conflict of interest for an agency issuing a federal consistency concurrence for itself.
- G) The action will be undertaken directly by the federal government and therefore potentially involve other federal consistency procedures and possibly duplicate or result in inconsistent federal consistency determinations.
- H) The action will be located in or near an APR and therefore require in-depth scrutiny by all EOEAs agencies. Or
- I) The action would involve some procedure, use or activity discussed in a Memoranda of Understanding between CZM and some other EOEAs, state or federal agency and may thus entail special procedures or other efforts to coordinate processing.

#### 7.16

- A) For those proposed actions which EOEAs agencies are processing applications for state licenses or permits consistently with the CZM plan and which do not contain circumstances requiring CZM coordination, CZM shall issue its concurrence on the federal consistency certificate, subject to whatever conditions will be imposed by the EOEAs agency implementing the CZM plan. CZM shall send such concurrence to the EOEAs agency. The EOEAs agency shall issue its permit or license together with the CZM concurrence. Should the EOEAs agency deny the license or permit pursuant to CZM policies, then the EOEAs agency shall likewise indicate disagreement with the consistency certificate.
- B) The EOEAs agency shall act within its statutory or administrative time-frame in issuing, denying, or conditioning the permit or license. CZM shall contact the EOEAs agency regarding any public comments received prior to EOEAs agency action. In no case may the EOEAs agency act within less than 30 days from publication in the Monitor.
- C) Should later information reveal circumstances which may require greater CZM involvement, CZM shall appropriately participate in the EOEAs review, including the issuance of the concurrence, or disagreement or conditioning the consistency certificate.

7.17

A) For those consistency certificates which will require CZM coordination, CZM shall contact the necessary agencies, conduct studies or site visits, or take other appropriate measures to assess the consistency of the proposed action with the plan. CZM shall then issue its concurrence, disagreement or conditions on or with the certificate directly.

B) CZM may inform the applicant and the appropriate federal and state agencies of the nature of the review, what policies are at issue, and an estimate of the time needed to evaluate the action. In no case may the investigation require more than six months.

COMMENTARY

All consistency certificates will need to come through CZM in order to be published in the Monitor (which is also administered by the Office of the Secretary and located on the same floor). CZM has imposed a 10 day time limit on itself in order to make the threshold decisions described in Section 7.15. It is anticipated that the vast majority of actions will fall either into (A) or (B). If in (B) where the EOEa agency has staff adequate to make the investigation, CZM will again promptly issue its concurrence. The type of action anticipated by (B) are those where the policies address the impacts of a particular action which must be evaluated before it can be determined whether or not it is consistent with the plan. For example, Policy 12b allows private flood and erosion control projects with no adverse effect on adjacent properties or downcoast areas. Since these projects will have to be reviewed by DEQE for the purpose of the state license, CZM will not conduct a second review.

It is further anticipated that for many of the other situations, CZM's role will merely be to contact other EOEa or federal agencies to insure that the EOEa agencies incorporate public comments, etc. CZM by working closely with the CZM coordinator in the DEQE office, will be able either to issue its concurrence, disagreement or conditions consistently and concurrently with the DEQE issuance of the permit, or will transmit to DEQE its concurrence as in 7.16(A).

For some actions, there will need to be full involvement by CZM. These are actions that have major policy implications, are addressed by several, possibly contradictory policies of the plan, or are of such a scale or magnitude that they require a thorough multi-agency review. Such situations may be where a non-water dependent use is proposed for a port area or where an action is proposed for an APR. Other cases, for instance where state and private monies are being used to provide waterfront redevelopment might be entirely consistent with CZM's policies and thus CZM's role would be to promote and ease such actions through the permitting system.

CZM will also be responsible for coordinating with federal agencies. Special Memoranda of Understanding may be entered into which will relate to coordinated processing, joint site visits, etc. It will be CZM's responsibility to contact the EOEa agency and the federal agency in order to promote such inter-governmental cooperation.



The basic function of 7.15 - 7.17 will be to filter those projects which will require some measure of CZM coordination from those which the EOEa agencies can process independently in order to eliminate duplication for the more routine reviews and to expedite inter-agency review of the more complex ones.

#### 7.18

Upon a showing of proof of delivery by certified mail, return receipt requested, showing to whom, where and address where delivered, any applicant may compel CZM to issue its concurrence six months after the date of delivery.

#### COMMENTARY

This section is included for the protection of applicants in the event that papers are not delivered or are misplaced by the agencies. Applicants are urged to call or write CZM if they do not hear from an EOEa agency or CZM within an expected time period, rather than waiting for the full time period to elapse.

The federal regulations allow states six months in which to issue their concurrence on consistency certificates. Massachusetts CZM believes this time period is far too long for the great majority of cases and thus has imposed on itself the 10 day first-cut requirement. But, in order to allow for flexibility, in cases where a full study may be required, the full time period is retained.

#### 7.19

For any federal permit actions not listed in 7.10 or occurring outside the coastal zone, but which may effect the coastal zone, CZM may choose to require a filing of a consistency certificate. CZM may use A-95, MEPA, or NEPA reviews, citizen information or other measures to learn of pending actions. CZM shall then inform the applicant of the need to file a consistency certificate.

#### 7.20

- A) CZM may concur with the action as proposed and mail the completed consistency certificate to the applicant; or
- B) CZM may concur with the action subject to conditions regarding the mode, scale, location, design, operation, etc., of the proposed action and/or reserving the right to object and compel modification or cessation of the action or its manner of implementation should it be later found to be inconsistent with the management program. CZM will then mail copies of its conditions and/or reservations to the applicant, and the federal agency.

- C) CZM may object to the action, and mail copies of the objection to the applicant, the federal agency, and the Associate Administrator of NOAA. The objection must describe how the proposed action is inconsistent with the management program and (if they exist) alternative measures which, if adopted by the applicant, would permit the proposed activity to be conducted in a manner consistent with the CZM plan. The objection may be based on a determination that the applicant has failed to supply sufficient information for CZM to find, with reasonable assurance, that the proposed action will be conducted consistently with the CZM plan. If the objection is based on the grounds of insufficient information, the objection must describe the nature of the information requested and the necessity of having such information to determine the consistency of the action with the CZM plan.
- D) In either B or C the notice to the applicant shall inform the applicant of his/her right to appeal to the Secretary of Commerce.

#### COMMENTARY

This section parallels 15 CFR Section 930.64 of NOAA's Federal Consistency Regulations.

#### 7.21

CZM will utilize and abide by the conflict resolution procedures established by NOAA and described in their Federal Consistency Regulations.

#### 7.22 Categorical Concurrences

Where a federal agency routinely processes permits for minor actions or maintenance actions to existing structures or facilities, CZM may issue a categorical concurrence for actions where:

- A) The proposed actions are all of similar types, scale, and/or geographical location such that a single evaluation by CZM could substantially reveal the impacts of the proposed activities and their consistency with the CZM plan.
- B) The actions all fall within Section 7.15(A) of these regulations and thus would receive limited scrutiny by CZM under normal procedures.
- C) CZM issues notice in the 62-Monitor and holds a public hearing.
- D) The Categorical Concurrence describes in detail the types, scales, geographical location, duration of the actions which CZM finds are consistent with the plan, and specifies any conditions or exceptions thereto, which may include notice of when any action is to occur.
- E) CZM has coordinated the terms of its Categorical Concurrence with other federal, state or local agencies where possible.
- F) CZM shall notify the federal, state and local agencies of its Categorical Concurrence and shall mail the Categorical Concurrence to the applicant.

COMMENTARY

Section 7.15(A) is designed to inform applicants and federal agencies swiftly of the consistency of actions with the CZM plan where it is possible to make that determination after limited evaluation. For instance if the activity is permitted under Policy 1 (wharf on pilings or utility lines through marsh), or Policy 34 (residential home outside of SRA's and APR's with hook-up to existing sewer or soils satisfactory to Title 5 of the Environmental Code (septic standards) and approved by local government, then CZM concurrence is automatic. Therefore, where such actions will occur frequently, separate applications and review for each action could create unnecessary burdens on applicants and on agencies. This section is designed to require a single in-depth evaluation of the group of proposed actions, and then to permit the individual actions to proceed without focused review.

7.23

The list of federal licenses or permits which are subject to consistency review by CZM may be amended at any time by 30 day public notice in the Monitor, notice to the federal agency, to NOAA, and conformance to the requirements of the Administrative Procedures Act.

7.24

CZM shall issue a final notice in the 62-Monitor of all actions which it concurred with or objected to.

7.30 Procedures for Federal Agency Activities

15 CFR 930.30 et. seq. and as they may be amended are hereby incorporated and adopted as the general procedures governing the conduct of federal agencies and the Coastal Zone Management office regarding federal activities in the coastal zone, subject to the special provisions below.

COMMENTARY

Federal agencies are required by Section 307(c)(1) of the CZMA and 15 CFR 930.34 to develop consistency determinations for activities directly affecting the coastal zone, to notify state agencies of all consistency determinations and to consider state responses prior to proceeding with the proposed activity and shall conduct all activities consistently with the state CZM plan to the maximum extent practicable. Federal activities include federal development projects, resource management practices, OCS leasing determination, the issuance of licenses or permits to other federal agencies. For further information, please refer to the Federal Consistency Regulations.

7.31 List of Federal Activities Requiring Consistency Determination

The following activities are deemed to directly affect the coastal zone and will require a federal agency consistency determination.

Army Corps of Engineers:

- proposed project authorization for dredging, channel works, breakwaters, other navigation works, erosion control structures, beach replenishment, dams;
- proposed acquisitions.

Department of Interior:

- proposed Bureau of Land Management OCS lease sales;
- proposed National Park Service acquisitions;
- proposed U.S. Fisheries and Wildlife acquisitions.

Department of Defense:

- location and design of new or enlarged defense installations.

Department of Transportation:

- location and design of new or enlarged Coast Guard stations, bases and lighthouses;
- location and design of aviation communication and air navigation facilities.

General Services Administration:

- location and design of proposed federal government property acquisition and building construction;
- disposal of surplus federal lands.

Amtrak, Contrail:

- railroad expansions, new construction or abandonments.

7.32 Other Federal Activities

- A) CZM shall utilize MEPA, NEPA, A-95 review, or citizen information to learn of federal activities not listed in Section 7.31. If CZM determines that the activity could directly affect the coastal zone, it shall so notify the federal agency and a federal agency consistency determination will be required.
- B) The list of federal activities in Section 7.31 may be amended at any time by 30 day public notice in the Monitor, notice to the federal agency, to NOAA and conformance to the requirements of the Administrative Procedures Act.

### 7.33 Negative Determinations

A) Federal agencies may apply for a Categorical Concurrence of the consistency of similar or minor actions with the CZM plan pursuant to Section 7.22 of these regulations. Once a Categorical Concurrence has been issued by CZM, the federal agency may then submit a negative determination to CZM to notify CZM of the undertaking of the action.

B) If a federal agency submits a Negative Determination to CZM which is not covered by an existing Categorical Concurrence, CZM will treat the Negative Determination as if it were a standard federal agency Consistency Determination.

#### COMMENTARY

Section 7.22 creates a process where recurring or minor actions may be evaluated categorically for their consistency with the CZM plan. While the federal regulations do not specify that such a process can be used by federal agencies in addition to applicants to federal agencies, Section 930.36(c) does create a process for negative determinations. In order to lessen the number of separate administrative procedures and to give federal agencies the scrutiny of a before-the-fact concurrence, utilization of the categorical concurrence procedures is warranted.

### 7.34 Form for Consistency Determination

A) The consistency determination shall be provided to CZM at least 120 days (approximately 4 months) before the federal activity reaches a stage of commitment likely to restrict the use of alternative measures for undertaking the activity.

B) The consistency determination shall be sent to: Executive Office of Environmental Affairs, Coastal Zone Management Office, 100 Cambridge Street, Boston, Massachusetts 02202.

C) The consistency determination shall include a detailed description of the activity and comprehensive data and information sufficient to support the federal agency's position.

D) The consistency determination shall also identify:

- 1) whether the proposed activity is located within or outside of the coastal zone.
- 2) whether the proposed activity is located in an SRA.
- 3) whether the proposed activity is located in or near an SADA.
- 4) whether the proposed activity is located in or near an APR.
- 5) what CZM policies are affected by the proposed action.

#### COMMENTARY

Subsections (A) and (C) parallel the requirements of the federal consistency regulation 15CFR 930.40 and 930.41. In lieu of Subsection (B), should a federal agency prefer the A-95, NEPA procedures, or other mechanism detailed in a Memorandum of Understanding with CZM, it may be used to provide CZM with the consistency determination as long as the substantive information provided is sufficient for CZM to determine whether or not it agrees or disagrees with the federal agency's determination.

Completion of the information in Subsection D is critical to a determination of the consistency of the proposed action with the CZM plan. Pursuant to the federal regulations, federal agencies must relate the impacts of the activity to the relevant elements of the state management program (15 CFR 930.41). Most of CZM's policies are either area or activity related. The CZM maps and other matrices and guidelines can be used to quickly identify those areas and activities which are relevant to the CZM policies. Since some CZM policies support and strongly encourage some types of federal actions and since other policies seek to discourage or prohibit other types of actions in certain areas, the maps and matrices/guidelines will be important tools to identify the relevant policies and assist in determining consistency with the plan.

#### 7.35 CZM Response

A) Within 15 working days of receipt of the consistency determination, CZM shall inform the federal agency of its agreement, disagreement, or need to further evaluate the proposed action. CZM review will follow the same criteria as described in Section 7.15 for consistency certificate for permits or licenses, with the following exceptions. Consistent with the federal regulations if CZM requires additional time to conduct further studies or site investigations, it may request that the 60 day time period be extended. Federal agencies shall approve a request for 30 days or less. Longer requests may be granted depending on the magnitude and complexity of the proposed action and the information in the consistency determination.

B) If CZM disagrees with the consistency determination, CZM will describe how the proposed activity will be inconsistent with the management program and alternative measures (if they exist) which, if adopted by the federal agency, would allow the activity to proceed in a manner consistent to the maximum extent practicable with the management program. CZM will send a copy of its disagreement to the Associate Administrator of NOAA.

C) In the event of disagreement, CZM will attempt to informally resolve the issue with the federal agency or will utilize the mediation services of the Secretary of Commerce.

#### COMMENTARY

This section substantially parallels 15 CFR 930.43 - 930.45.

#### 7.40 Procedures for Federal Assistance to State and Local Governments

- (A) 15 CFR 930.90 et seq. and as they may be amended, are hereby incorporated and adopted as the general procedures governing the issuance of CZM's agreement or disagreement with requests for federal assistance by state and local governments, subject to the special provisions below.
- (B) CZM will utilize the A-95, MEPA and NEPA review procedures, citizen information, Memoranda of Understanding, or other measures to receive notice of all grants, contracts, loans, subsidies, guarantees, insurance or other forms of federal assistance to be awarded to any unit of state or local government or any related public entity.

#### COMMENTARY

The CZMA and the Federal Consistency Regulations prevent any federal agency from granting any form of assistance to any public body which may affect the coastal zone without the concurrence of CZM. Furthermore, no federal agency may disburse such funds if a dispute has arisen concerning whether or not the federal assistance project is subject to the consistency review until such dispute has been settled,

#### 7.41

- (A) Any federal assistance (as described in 7.40B) to any recipient (as described in 7.40B) located
  - (1) in whole or in part within the coastal zone, or
  - (2) outside of the coastal zone but affecting land and water uses in the coastal zone, as determined by CZM in its reviews, pursuant to 7.40B,shall be reviewed by CZM.
- (B) This section shall be the federal assistance provision, which is required by the federal consistency regulations, to describe the geographic area where federal assistance will be deemed to affect the coastal zone.
- (C) Copies of this regulation shall be sent to all federal agencies, units of state and local government, and A-95 state and regional clearinghouses.

#### 7.42

For A-95 review, CZM will receive copies of all proposed assistance projects from the state clearinghouse, the Office of State Planning. Within the 30-day time limit, CZM will review the proposed assistance project according to the same criteria as described in Section 7.15.

- (A) For those proposed federal assistance projects which can be quickly assessed as to their consistency with the Plan, CZM will issue its agreement or disagreement on the forms provided by the Office of State Planning.

- (B) For those proposed federal assistance projects which will require additional time for on-site evaluation, in depth review, etc., CZM will notify applicant agencies, federal agencies, state and regional clearing-houses, and the Associate Administrator, CZM's notice will specify which policies are at issue and what the scope of the investigation will be, including estimates of the time involved,
- (C) After the review set out in 7.42(B) is completed, CZM will issue its agreement or disagreement, either on forms provided by the Office of State Planning or by letter to all the parties notified under 7.42(B).

#### COMMENTARY

CZM has been using the A-95 process during the past three years to monitor federal assistance projects affecting the coastal zone. The state Office of State Planning has 30 days in which to receive federal assistance requests, distribute them to various agencies including CZM, receive the comments, and return them to the federal agency. This has meant that commenting agencies, such as CZM, effectively have about two weeks in which to respond. Paralleling the procedures set out for federal licenses or permits, this allows sufficient time for CZM to make a threshold decision about the consistency of a proposal or the need for further evaluation.

#### 7.43 CZM Objections

CZM may object to or agree with, subject to certain modifications or conditions, the proposed federal assistance project. Such objections, conditions, or modifications must describe how the proposed project is inconsistent with the management program, and alternative measures, if they exist, which would permit the proposed project to be conducted in a manner consistent with the management program.

CZM objections shall include a statement notifying the applicant agency of the right to appeal to the Secretary of Commerce.



8.0 Performance Evaluation - The Secretary, consistent with his/her statutory responsibilities to continually review the operations of the office with a view towards improving administrative organization, procedures and practices, promoting economy and efficiency, managing the budgetary processes of the EOEAs, and as a continuing fiscal responsibility to the federal government to insure that the standards of Section 306 of the CZMA are being met, shall conduct periodic performance evaluations of the status of the CZM program in all appropriate EOEAs. Such evaluations may incorporate, but need not be limited to, such areas of inquiry as: (a) whether the EOEAs have made an initial determination as to the applicability of any CZM policy to an issue at hand and performed necessary investigations as to facts, site conditions, etc.; (b) whether the EOEAs have incorporated the CZM policy in its decision-making process and in its final decision, to the extent permitted under Section 5.6; (c) whether the EOEAs have attempted, through informal consultation with CZM and other EOEAs, to clarify and coordinate actions where there is a question as to the meaning or intention of a policy or as to how it should be applied in a particular circumstance or situation; (d) whether, in cases where the CZM policy has not been followed, it was not so followed consistently with Section 5.6. The performance evaluation may address the accuracy of the decision that CZM could not be applied due to the fact that it would call for an action impermissible at law and whether or not early efforts were made to communicate such concerns to the CZM staff; (e) whether the local government notification requirements were complied with; and (f) whether an agency acted contrary to policies or memoranda of understanding regarding the state funding actions.

#### 9.0 Miscellaneous Provisions

9.1 Severability - If any provision of these regulations or the application thereof is held to be invalid, such invalidity shall not affect other provisions or the application of any part of these regulations not specifically held invalid, and to this end the provisions of these regulations thereof are declared to be severable.

9.2 Amendments to these Regulations - These regulations may be amended from time to time by the Secretary in accordance with the applicable provisions of MGL Chapter 30A. At least once each year and following any major changes in the CZM plan or in the CZMA, the Secretary shall review these regulations and determine whether they continue properly to fulfill their purposes and the requirements of applicable legislation.

#### 9.3 Amendments to the CZM Plan

A) Minor amendments to the CZM plan shall include, but not be limited to, changes in the CZM maps, changes in the text, and relatively insignificant or non-controversial changes in the policies and the annual up-dates of the Regional Chapters as prepared by the Regional Citizen Advisory Councils. Notice of such changes shall be published in the Monitor and given to each member of the Regional Citizen Advisory Councils, the Governor's Advisory Council and to NOAA. If CZM has not been notified of any objection to the amendments within 30 working days of the postmark of the notice to the NOAA, and there have been no objections from the public or the Advisory Councils, the amendments shall become effective.

B) Major amendments to the plan are fundamental changes in the policies or the management framework. These changes shall be discussed at the Regional Citizen Advisory Council's meetings, at the meetings or the sub-committee meetings of the Governor's Advisory Council, and with NOAA. Notice of the proposed amendments shall be given in the Monitor. A public hearing may be held.

C) These regulations may be amended to reflect amendments from either (A) or (B), during the Secretarial review pursuant to Section 9.2.

#### 9.4

Generally in these Regulations, whenever the Secretary is to assume some duty or perform some function, she may appoint a representative or designee to assume such duty or perform such function in her name.

9.5 Number and Gender - Words imparting the singular number may extend and be applied to several persons or things, words imparting the plural number may include the singular, words imparting the masculine gender may include the feminine and neuter, and words imparting the feminine gender may include the masculine and neuter.

#### 9.6

Upon the request of any interested person, the Secretary may make an advisory ruling as to the interpretation of or the applicability to any person, property or state of facts with respect to this Regulation. In issuing the advisory ruling, the Secretary need not comply with the requirements of MGL Chapter 30A with respect to regulations.

#### COMMENTARY

This section parallels MGL Chapter 30A, Section 8.

Draft Model Regulations Implementing  
the Massachusetts Coastal Zone  
Management Plan

These are sample regulations for illustration only. They are modeled to follow the permit issuance process in one of DEQE's regional offices. Clearly different procedures will be required for direct action programs of DEQE or other agencies.

REGULATIONS IMPLEMENTING THE MASSACHUSETTS COASTAL ZONE MANAGEMENT PLAN

- 1.0 Authority These regulations are promulgated pursuant to the statutory authorities of the Department stated in MGL Ch. \_\_\_\_\_ and Chapter 21A, section 2.
- 2.0 Purpose These regulations are promulgated in order to carry out the state environmental policy as mandated by Chapter 21A Section 2, including the Coastal Zone Management Plan as a statement of such state environmental policy for the coastal zone. The further purpose of these regulations is to implement the CZM Program jointly with the Secretary of Environmental Affairs consistently with regulations adopted by the Secretary of for EOEA agencies relative to the coastal zone management program, to the extent that it is legally permissible to do so under the statutory authorities of this Department.
- 3.1 The statutory authorities are hereby interpreted and the administrative procedures, policies and actions of this agency shall hereby be implemented to be consistent with the CZM Program, except where: (a) to do so would require this Department to take an action impermissible at law. (b) the Secretary pursuant to the conflict resolution procedures of Chapter 21A Section 4 and Section 6.20 et. seq. of the Regulation Establishing the Coastal Zone Management Program by the Executive Office of Environmental Affairs has determined that the CZM Plan is overridden by more substantial and compelling interests.
- (3.2 -- may be other sections tracking the language of Section 5.0 et seq. of the Secretary's Regulation. There will probably be a definitional section too.)
- 4.0 CZM Coordinator There shall be designated in each regional office of the Department and in the main office of the Department a person or persons who shall serve as the CZM coordinator for all of the programs administered by each such office.

COMMENTARY Administrative feasibility will probably determine whether or not there is a single person appointed to fulfill the duties identified under 4.2 or whether there will be several persons who shall be responsible in part for the performance of the tasks in 4.2 in the course of discharging their duties. There will probably be one person primarily responsible for supervising the others, should responsibility be diffused. It appears preferable at the moment to have all agency personnel who are responsible in any way for actions within the coastal zone to be versed in the CZM Plan, at least insofar as it affects their duties.

4.1 Each CZM coordinator shall be thoroughly familiar with the CZM Plan, any amendments thereto, and all regulations, guidelines, and other implementation tools.

4.20 Procedures Upon receipt of an application for a permit or license to take some action or an appeal from the local level concerning an order of conditions issued under the Wetlands Protection Act (MGL Ch. 131, s. 40) or a \_\_\_\_\_ issued or denied by the local Board of Health pursuant to Title V of the State Environmental Code, a copy of the application or appeal shall be forwarded to the CZM coordinator for review.

4.21 The application form shall include the following questions:

1. Is the proposed action in the coastal zone?
2. Is the proposed action located in or on a salt marsh, shellfish bed, beach, dune, barrier beach, ....?
3. Is the proposed action located in or near an SADA?
4. Is the proposed action located in or near an APR?
5. Does the proposed action involve the use of federal or state funds?

COMMENTARY Questions 1-4 can be quickly answered by reference to the CZM maps. These will be on file with the Town Clerk and the main branch of the town library for those applicants who do not fill out their forms in person. If the answer to #1 is negative the applicant need go no further. No. 2 will list each type of SRA which has a CZM policy attached to it. No. 3 Special Assistance and Development Areas are indicated on the CZM maps by rectangular lines and as such are not intended to be site specific. Since SADAs are important only insofar as they connote priorities for the use of public funds and technical assistance, they have no regulatory impact.

GENERAL COMMENTARY Within five days and for those applicants who come into the regional office personally, while they are still there, the application will be given an initial review to determine whether or not a federal license or permit is required or whether federal funds are involved. If so, the applicant will need to also prepare a Federal Consistency Certificate. If so, it will be promptly forwarded to CZM for inclusion in the Monitor in order to meet the requirements of public notice, since under federal law, the state cannot concur with the applicant's consistency statement without an adequate period for public comment and thus the applicant cannot receive a federal license or permit without it. CZM will be working directly with the federal agencies to create ways to allow for concurrent processing to minimize delay.

4.22 Within 10 days (?) after the receipt of the application or appeal, the CZM coordinator shall:

- a) confirm the accuracy of the answers to questions 1-4 on the application form.
- b) decide what policies of the Plan apply to the proposed action. The specific policies will be identified in writing.
- c) Whether or not the CZM policies which apply to the proposed activity fall within the statutory authority of the Department to regulate the proposed activity.

- d) whether or not the proposed activity is inconsistent with each of the enumerated CZM policies.

4.23 The CZM coordinator shall further:

- a) Communicate the applicability of CZM policies to other members of the regional office staff who shall be involved in some other aspect of processing the application or appeal.
- b) Consult the CZM office in EOE A should any questions or clarifications be needed or should there be implications for other policies of the Plan in order to expedite a swift resolution of issues. A Memorandum for the file may be prepared and distributed to the other regional offices should the issue be one of broad public interest or carry implications for decision-making by DEQE staff in similar situations.
- c) The CZM coordinator shall perform or cause to be performed any further studies or site investigations which may be required in order to identify whether or not an action is consistent with the CZM Plan.
- d) The CZM coordinator shall consult the regional chapter and/or contact the Citizens Advisory Council for guidance in the application of the policies to the region and to the site.

4.24 When all other aspects of the agency review have been completed, the CZM coordinator shall review the "draft" DEQE decision to insure its consistency with the CZM Plan.

4.25 The Commissioner, or his representative or delegate, shall then issue the permit or appeal decision consistently with the CZM Plan for actions within the coastal zone, except as provided under Section 3.1(a) or (b).

5.0 Where the exception of Section 3.1 (A) apply. Where an approved action is in the coastal zone and CZM policies apply to the action but there is an issue as to whether or not the scope of discretion under the applicable enabling authority of the department is broad enough to allow the implementation of the CZM policies, the following procedures shall be used:

- A) Agency personnel shall not make determinations of law without consulting attorneys for CZM and DEQE. A joint Memorandum for the file shall be prepared by the DEQE and CZM legal staff which shall determine whether or not the statute encompasses sufficient scope of discretion as applied to the particular action to apply the CZM policies. This Memorandum shall be prepared in order to ensure consistent decision-making by DEQE staff in similar situations. Copies of such Memoranda shall be retained by the Regional Offices, in the Office of the Secretary, and by the DEQE main office. The Attorney General shall be consulted as appropriate. The Memoranda may be published as an advisory ruling issued jointly by the Commission and the Secretary pursuant to MGL, Ch. 30A, S. 8.

COMMENTARY

The preparation, distribution and collecting of such Memoranda for the file will be a key tool towards creating an administrative structure that applies the same laws consistently throughout

the coastal zone and over time. Members of the environmental and development communities plus state and local administrators of state programs all recognize the frustration and insecurity that has resulted from uncoordinated administration of state laws. While these Memoranda may not carry the full weight of stare decisis, they are intended to be of precedential value and thus to increase predictability and certainty in the evolution of the CZM Program.

- B) The CZM coordinator shall act consistently with the decision contained in the Memoranda for the file.

5.1 Where the exception of Section 3.1(B) applies. Where the application of the coastal zone policy would be permissible at law and where DEQE staff or the Commissioner feel the permit should be issued contrary to CZM policy, a conflict shall exist between two agencies of EOEA. DEQE staff, the CZM coordinator, or a member of the CZM central staff shall initiate the procedures described under Section 6.20 et. seq. of the Secretary's Regulation relating to the resolution of conflicts.

- A) The Commissioner and the appropriate DEQE staff and the CZM coordinator will act consistently with the resolution of the issue as determined by the Secretary.

6.1 Hearings - Standing In appropriate cases, the CZM coordinator may request or intervene in an adjudicatory hearing. The CZM coordinator and the CZM office, shall have standing as a party in any adjudicatory proceeding in which they intervene.



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## Appendix B: Public Participation – Public Information

## PUBLIC PARTICIPATION IN MASSACHUSETTS COASTAL ZONE MANAGEMENT

### INTRODUCTION

When President Carter wanted to attend a typical town meeting he came to Massachusetts. Town meetings have been held in Massachusetts for over three-hundred years to insure citizen participation in local affairs. Citizens at town meetings vote on town finances, the funding of staff, and set overall town priorities for the year. It is in this context that Massachusetts CZM developed its public participation and information program.

For example, to underscore the importance, concern, and trust CZM placed on public participation, Massachusetts Governor Michael S. Dukakis presented the Massachusetts Coastal Zone Management Preview--A Preliminary Program for Public Review to the citizenry of the Commonwealth on December 16, 1976. This publication and presentation in the auditorium of the New England Aquarium represented two years of governmental work, and the mid-point in Massachusetts CZM's public participation/information effort. Present in the audience were some two hundred people -- members of the Governor's Task Force on Coastal Resources, members of CZM Citizen Advisory Committees, representatives of all levels of government, dozens of affiliated and non-affiliated citizens interested in coastal resource related issues, and representatives of the electronic and print media. The audience was present to share in the public unveiling of a "pre-draft plan" that developed and improved with the knowledge, help and experience of literally thousands of volunteers over the thirty month CZM planning period. Over 1500 copies of the Preview Summary were distributed. The very notion of a Program Preview -- a pre-draft plan for public comment and review prior to the preparation of a CZM Plan -- builds upon the town meeting concept.

Public participation, as it developed in Massachusetts, was a part of the planning process, not separated from it. Planning decisions, planning concepts and choosing among management alternatives were all public activities.

The goal was to improve the plan by making program development a public process. Citizens and officials throughout Massachusetts were asked to lend their experience, knowledge, and concern to Massachusetts CZM. This philosophy required an honest commitment to listen and respond to ideas, suggestions and criticism from the public. The CZM staff recognized that public participation did not mean public co-optation but public involvement. However, the staff recognized that all opinions could not be incorporated into CZM policies. The public participation program provided a forum and an opportunity to hear, learn, and respond to citizens and officials. The very nature of CZM planning is one of balancing conflicting and competing demands. Some conflicts could not be resolved. At times, decisions were made by consensus; at other times, when CZM staff and citizens disagreed, lines of communication were kept open and issues talked out.



In the process of improving the plan, the public participation program also tried to educate the public; provide the public with an opportunity to express varied and divergent viewpoints; solicit and determine public acceptance of various alternatives; provide for conflict resolution; and establish avenues for collecting valuable information and insight.

Public information and education played an important role in the success of the public participation program. This theme will be expanded further on in the appendix.

Massachusetts CZM had many publics, each with different needs and concerns. Different participation processes were needed for these publics. Some public participants were active, and enjoyed attending meetings, talking, working and writing. Other participants were passive, and included people who stayed involved by staying informed; or people who choose to become involved only after a total plan was proposed. Some participants were affiliated group members, others were not. Interests or needs not represented were solicited and included.

The Massachusetts public participation program therefore had many concomitant and mutually supportive activities and organizations. The Governor's Task Force on Coastal Resources served as CZM's first level of public participation and its Board of Directors. Large public meetings were held during the planning period. CZM Citizen Advisory Committees (CAC) were organized in the coastal regions. The Office of State Planning formed local Growth Policy Committees in all 87 of the original coastal cities and towns. Town-by-town and interest-user group meetings were held. Finally, to provide one more level of information concerning public needs, a statistically valid public opinion survey of roughly 1000 coastal residents was conducted.

#### THE GOVERNOR'S TASK FORCE ON COASTAL RESOURCES

In January 1974, the Governor appointed a Task Force on Coastal Resources to work with the Secretary of Environmental Affairs in preparing the state's first application for Section 305 funding under the federal Coastal Zone Management Act of 1972 (PL 92-583). The 42 member volunteer Task Force included three members of the State Senate, four members of the House, a member of the Attorney General's Office, four cabinet secretaries, mayors, selectmen, bankers, planners, fishermen, and representatives of universities, utilities, businesses, chambers of commerce, the Massachusetts League of Cities and Towns, regional planning agencies, environmental, recreation, and civic interests. (See exhibit A for a list of Task Force members.)

Through the Governor's Task Force on Coastal Resources in general and the Task Force committee on public participation in particular, the CZM staff received a mandate to include public participation in every phase of the planning program. The Task Force wanted to develop a constituency based upon continuous public involvement and understanding. Roughly a quarter to a third of the annual CZM budget was directed to public participation/information. More than providing financial and

moral leadership however, the Task Force was an invaluable working body. For its first year and a half the Task Force met monthly (total of 18 meetings). In June, 1975, the Task Force reorganized, decided to meet quarterly as a whole, and put the majority of its effort into committee meetings. All totalled, the Task Force has met 25 times, and held three workshops (see Exhibit B for dates of Task Force meetings).

The Task Force had six committees; planning, public participation, laws and management, OCS/energy facilities, coastal review center, and a policy steering committee. The latter committee, consisting of the chairmen of the five other committees, guided the activities of the Task Force. The committees of the Task Force generally met once a month. However, during intense work periods, such as the six weeks prior to completion of the Program Preview, committees met weekly or every two weeks. Roughly speaking the Planning Committee met 40 times, public participation 34, OCS/energy facilities 15, coastal review center 15, laws and management system 20, and policy steering committee 25.

Each Task Force member was a member of at least one committee. Committee chairmen drew upon non-Task Force members as well to add balance and expertise to the operations of the committee (see Exhibit C for a list of committee membership).

The Task Force was a broad-based, continuous, state-wide advisory and review board. The Task Force was able to work out major areas of conflict among competing demands. The Task Force established the goals and objectives of the Massachusetts CZM program and set priorities for staff planning activities.

Task Force members represented all age groups, a mix of educational and financial backgrounds, and were drawn from all geographic areas of the coastal zone, plus inland representation.

The Task Force and its committees met several vital needs:

- The Task Force reviewed alternative management systems, and concluded that Massachusetts had substantial legal and administrative authority to implement its policies and program.

- The Task Force provided direction in setting priorities for uses, areas and activities in the Massachusetts coastal zone. The Task Force debated the economic, social and environmental trade-offs necessary in making decisions on priority and permissible activities.

- The Task Force intervened where necessary to protect the values and needs of inland and urban residents of the Commonwealth.

- The Task Force members intervened on the local and regional level when state vs. local issues developed.

- The Task Force established mechanisms to resolve conflicts, such as in setting policies on energy facility siting in the coastal zone.

- The Task Force reviewed and approved specific recommendations of the New England River Basin Commission's Southeast New England

Study (SENE) for incorporation into CZM Planning.

No area of state CZM activities was outside the purview of the Task Force. The Task Force reviewed annual "305" program development applications and budgets. Some Task Force members made public speeches about the CZM program and followed local and regional CZM activities. Special studies were initiated at the Task Force's request.

Many of these activities occurred at the monthly/quarterly meeting of the Task Force. The bulk of the subject-specific work took place at the monthly meetings of the committees of the Task Force. Each committee had a mandate:

Planning: to set overall CZM planning policy and priorities, to critique staff planning reports, data and maps; to assist in establishing planning methodology; to resolve conflicts when necessary; to oversee planning contracts and products with non-staff consultants such as regional planning agencies and the University of Massachusetts (Amherst) Institute for Man and Environment.

Public Participation: to set overall public participation and information policy and priorities; to ensure that all socio-economic, political and geographic areas are equally and fairly represented in the CZM program; to ensure a viable participation and information program including mechanisms for two-way communication; to review, critique and approve staff initiated participation/information projects; to initiate participation/information programs; to oversee contracts for services such as survey research and printing.

Laws and Management System: to work with the CZM staff evaluating alternative management systems, the adequacy of various authorities, and options and opportunities for overall management; to set legal priorities for the CZM program; to review and critique staff efforts and products; to assist in the preparation of legal documents; to oversee outside contractors such as Boston University Law School; to suggest areas for further legal research.

OCS/Energy Facilities: to work with the CZM staff in setting overall state CZM policy on outer continental shelf oil and gas exploration and potential development; to critique and review staff reports and actions in the OCS area; to suggest methodology and activities for OCS policy development; to ensure that the public's voice be heard; to analyze, critique and review staff efforts pertaining to energy facility siting; to serve as a forum for discussion and conflict resolution on energy facility siting issues.

Coastal Review Center: to provide overall guidance and priority setting to the section of the CZM program that deals with short term coastal problems and brings a scientific perspective to coastal resource problem solving; to review staff progress on projects; to review and critique staff reports; to help identify problem areas for staff research.

Policy Steering Committee: staffed by the director of the CZM program, and consisting of the chairmen from the five committees plus several Task Force members, this committee set overall policy for the CZM program, for the Task Force, and for the other committees of the Task Force; reviewed the annual program budget and application; served as a forum to resolve conflicts among committees; set the agenda for the quarterly Task Force meetings.

#### PUBLIC MEETINGS

Large, well publicized general public meetings play an important part in any public participation effort. They provide a public forum where citizens and officials can describe problems and issues, and they help establish a dialogue. Public meetings serve a safety valve function.

Massachusetts CZM embarked on a public meeting series in its earliest months. Too often, public opinion and involvement with state plans develop in reaction against an established program rather than contributing to the successful evolution of that program. Massachusetts CZM turned to citizens to help develop the program step-by-step.

Public meetings were especially important because Massachusetts CZM staff members heard the problems of citizens and locales, learned of past failures and inadequacies by federal, state and local government, and better understood the values and needs of the citizens present.

The questions posed by citizens and officials at public meetings were important indicators for areas of CZM research and planning. The contacts at public meetings helped CZM planners to think about people and their problems while developing future policy. The relationship between citizens and CZM planners served to improve the overall CZM efforts.

Press coverage was important to the public participation effort to inform people who were not present at the meetings.

CZM found that direct mail invitations and phone calls encouraged people to attend public meetings. These devices personalized the meeting. Of citizens polled at meetings, about 85% heard about or attended the meeting as a result of direct mail invitations or phone calls.

Each phase of the planning program centered around public meetings. The original 87 cities and towns in the Massachusetts coastal zone were broken down into ten sub-areas for purposes of organizing public participation and planning. The break down was based on geographic, political and social boundaries. A series of three large meetings was scheduled for each of the ten areas. Two sets of meetings have concluded, and the third set is planned for July-September 1977.

Prior to the first series of meetings, the CZM public information staff began making contact with established political, special interest, and community groups, to explain Massachusetts's CZM and solicit their participation and interest. On Cape Cod, for example, CZM staff members met with the executive board of the Association for the Preservation of Cape Cod, the head of the Cape Cod Board of Realtors, the editor of the Cape Cod StandardTimes, the Cape Cod Selectmen's Association and the Executive Committee of the Cape Cod Planning and Economic Development Commission (CCPEDC). Staff planners from the Cape Cod Regional Planning Agency (CCPEDC) expanded on the process and met with the Cape Cod Home Builder's Association, the Board of Realtors, the Society of Professional Engineers and Land Surveyors, the Cape Cod Charter Boat Operators Association, and the individual town planning boards and boards of selectmen.

At the first set of meetings, occurring February-April 1975, CZM staff members introduced the CZM program, explained the CZM history and mandate, outlined a proposed planning process and described a program of citizen and community involvement. The first public meeting began a two-way communication process, as citizens' questions and statements gave the staff a sense of the issues, goals, problems and opinions of particular local concern. The first public meeting provided the opportunity for CZM or a regional planning agency under contract to CZM for public participation purposes, to begin organizing an on-going citizen participation effort.

In organizing the first series of meetings, Massachusetts's CZM recognized geographic, social and political differences, and adjusted its activities accordingly. (A list of meeting dates, invitations, attendance, and sample press releases are collected in Exhibit D.)

The second series of public meetings occurred in November and December, 1975. The CZM staff looked for public assistance at the meeting in making decisions about state policy on outer continental shelf oil and gas development, alternative coastal zone management systems, critical areas (GAPC) and permissible use criteria. The CZM staff explained each of these subject areas at the public meetings, using slides, charts, maps and reports as visual aids.

--OCS: with the call for tract nominations concluded, many coastal communities expressed concern over the OCS issue. A slide presentation was prepared which explained OCS facilities and the needs for the three stages of OCS activity -- exploration, development, and production. Citizens were informed about criteria for siting exploratory facilities and planning for the potential on-shore and near-shore impacts of OCS development.

--Boundaries: the CZM staff presented ten alternative management boundaries (plus combinations).

--Management: Five different options, ranging from coordinating existing authorities in the Executive Office of Environmental Affairs to writing new management legislation, were proposed at public meetings. The overwhelming majority of citizens supported improving the state system rather than introducing new legislation.

--Critical Areas and Permissible Use Criteria: Citizens helped evaluate whether the seven types of critical areas met the needs of coastal communities. The seven categories included economic opportunity areas (such as urban ports); scenic areas; hazardous areas; coastal ecosystems; non-living resource areas, recreational areas; and special areas where many coastal uses co-exist.

(In both sets of meetings, regional slides and maps were used to heighten the interest of the audience.)

The third series of public meetings has been scheduled for July-September 1977. This series of meetings will serve as "mini-hearings" on the CZM plan. The meetings will allow Citizen Advisory Committee members and the CZM staff to explain the CZM plan and collect comments from other citizens. The insights and observations made at this series of public meetings will be presented in writing at the federal EIS hearing on the CZM plan, thereby allowing greater representation at the hearing.

CZM recognized that public meetings have serious limitations however. The percentage of the population willing to attend evening public meetings is quite small, often a fraction of the population. A vocal and concerned minority attend public meetings. Often, the attendees have a specific issue or problem they want addressed. Public meetings are an important forum but do not necessarily reflect the true range and depth of public sentiment.

Originally, CZM staff members hoped to develop a constituency of informed citizens who would attend a series of public meetings. The staff desire was to minimize content redundancy from earlier meetings. But, roughly 50% of the audience changed from meeting to meeting, necessitating a general introduction and review at each meeting as well as a new agenda. The level of citizen interest and specificity of questions and comments varied widely at each meeting.

#### CITIZEN ADVISORY COMMITTEES

Following the second series of large public meetings, the CZM staff recognized the need for a small representative body of citizens and officials who would work monthly on the evolving CZM program. Seven advisory committees and an ad-hoc committee on Boston Harbor was formed. The Executive Committee of the Nantucket Planning and Economic Development Commission (NPEDC) and the members of the Martha's Vineyard Commission served as advisors to CZM completing the advisory structure.

Recognizing the geographic, social and political differences of each region, CAC membership varied. Generally, each advisory committee consisted of an appointee of the mayor or Board of Selectmen, as well as representatives of the major user-interest groups for the region. Each committee had about 20 formal members plus other interested citizens. The commercial fishing industry, marina operators,

real estate-development interests, coastal property owners, chambers of commerce, harbor and neighborhood associations, recreational boaters, swimmers, utility companies, conservation commissions and civic and environmental interests were represented.

Due to the complexity and large population of the greater Boston Harbor area, a special Ad Hoc committee of the Governor's Task Force was formed to review the Program Preview and the regional chapter. Committee representation included Massport, the Metropolitan Area Planning Council, the Boston Redevelopment Authority, the Boston Economic Development and Industrial Commission, the Boston Harbor Pollution Committee, the Boston Harbor Associates, the South Boston Neighborhood Association, the Conservation Commission of Quincy, the South Shore Chamber of Commerce, the legislative representative from Winthrop, boating and marina interests, the Sierra Club, the League of Women Voters, and several interested citizens and officials. The committee was chaired by a Task Force member who operates a business on the Boston waterfront and lives in Winthrop.

At the suggestion of the committee, the Boston Harbor regional chapter is being reviewed by a wide public including various units of government, community and neighborhood associations, and user and interest groups. More than 500 copies of the chapter have been distributed for public review. City, town and neighborhood meetings are under way.

The Advisory Committees accomplished a variety of tasks. Advisory Committee members worked with town officials and others to verify, correct and update CZM resource maps. Some correcting required on-site inspections; some came from town reports and studies, and personal knowledge. CAC members added much new information on maps concerning erosion and flooding areas, important view points, recreation opportunity areas, boat landings, and critical environmental resources (see sample map, Chatham, MA. Exhibit E). A Checklist for Reviewing CZM Maps and Charts was prepared to assist and guide CZM/CAC members in their work. (See Exhibit F for a copy.)

Once the information on the maps was verified, the staff of CZM and regional planning agencies conducted town-by-town meetings. At the meetings, CAC members, as well as local government representatives and other interested citizens identified important uses, activities and problems in the region, and set priorities for government activities to improve, enhance, restore or develop the region's resources. The CZM staff prepared a questionnaire entitled, Which are the most Important Coastal Resources in Your Community? to assist CAC members and other interested citizens in setting priorities. The questionnaire covered recreation resources, eroding and accreting areas, areas where erosion and recreation and/or scenic qualities coincide, scenic resources/coastal character, and marine resources. (See Exhibit G for a copy of the questionnaire.)

Citizen Advisory Committee members reviewed a staff planning paper on alternative management boundaries, and some CAC's used a boundary worksheet to evaluate eleven boundary alternatives, the

Paragraph 1, sentence added at end of paragraph:

("The town of Scituate, in order to ensure coordination with the state's CZM program, established a town CZM Commission made up of representatives of the Board of Selectmen, Planning Board, Conservation Commission, Waterways Board and coastal residents. Commission members attend CAC meetings and help keep the other town boards informed.)

natives for the future. Some of the questions sought to surface examples of past failures or inadequacies on the part of local or state government. Other questions concerned inter-community management issues, public involvement in management decisions, and future management options and needs. (See exhibit I for a copy of the questionnaire.) The questionnaire proved most effective at highlighting deficiencies in the existing management system. Copies of the survey were sent to all local governments. (The questionnaire was adapted for an issue of "Coast Lines" on management, and 5000 additional copies were eventually distributed.)

CAC's reviewed the CZM Program Preview for accuracy, adequacy and consistency in addressing issues they had raised. CZM policies were evaluated and improved. The review of the entire Preview took several months, many meetings, and countless hours of volunteer effort.

One of the most important tasks of this volunteer force of citizen planners was in helping prepare regional sections of the CZM plan. The regional sections describe the citizens' areas of concern and CZM's response to those concerns. The sections have a common structure: a description of the region, citizens perceptions, policy applications, map commentary, and a set of three-color maps. Many months of citizen work came together in the verbal and map commentary in the regional sections. Committees often met week-by-week for the two months prior to submission to complete their work.

#### ADDITIONAL NOTES ON THE CITIZEN

#### ADVISORY COMMITTEE STRUCTURE

The structure and operations of the CAC's varied from region to region. On Cape Cod, for example, each community formed a local CZM committee. One representative of the town sat on the Cape wide Citizen Advisory Committee. While none of the other regions had town CZM committees, CAC members did seek the advice of selectmen, mayors, conservation commission members, planning board members, and others.

For Cape Cod, southeastern Massachusetts, Martha's Vineyard and Nantucket, regional planning agencies were under contract to the Office of Environmental Affairs - CZM to direct public participation efforts, with the assistance and guidance of the CZM staff. CZM staff members conducted a public participation program for the remainder of the coastal zone. In a special arrangement with CZM, the Metropolitan Area Planning Council worked with CZM staff members in the participation program.



## LOCAL GROWTH POLICY COMMITTEES

While CZM was establishing its Citizen Advisory Committees, the Office of State Planning began implementing state legislation calling for the establishment of Local Growth Policy Committees (LGPC). These committees had the task of establishing local priorities and desires for future town growth. The Office of State Planning prepared a questionnaire for use by local committees which structured responses and provided state wide uniformity of information. The CZM staff worked with the State Planning staff in preparing the questionnaire for town use. The information provided by local communities provided one additional level of input for the CZM program.

Rather than ask a series of coastal resource related questions in a state wide questionnaire, CZM prepared a Coastal Zone Management Supplement for coastal Local Growth Policy Committees. Many of the questions in the supplement paralleled the CZM Public Opinion Survey; others concerned management issues. By comparing the responses of the local committees, CZM had one more level and check on its survey and on community values. (See Exhibit J for copies of the Local Growth Policy Questionnaire and the CZM Supplement.)

Where possible, CAC members sat on Local Growth Policy Committees and vice versa. This ensured a two-way flow of communication between these mutually supportive public groupings. While their tasks differed widely, both groups shared the value of improving planning for the future.

CZM staff and Advisory group members attended some Growth Policy Committee public hearings. Some Growth Policy Committee members attended CZM workshops and large public meetings.

CZM staff members have read every coastal Local Growth Policy Committee Report and CZM Supplement.

## PUBLIC OPINION SURVEY

Massachusetts CZM took its commitment to broad public participation directly to the people. While land use planning decisions are based in large part on factual data and scientific information, the decisions have their ultimate impact on the daily lives of the people who live with them. CZM solicited the thoughts and feelings of coastal citizens through public meetings, the Governor's Task Force, Citizen Advisory Committees, mailings and meetings with small groups. These avenues of public involvement guarantee a forum for organized groups, or for people with an issue, problem, or idea to discuss. Often, the citizens and officials who involve themselves in the CZM planning programs have a keen interest in coastal resource activities, development and government. But what about those people

who don't go to evening meetings or don't belong to any group, but make their livelihood along the shore or just enjoy an occasional day at the beach?, or people who use the resources of the coastal zone but live elsewhere in the state? How are their values and needs to be communicated to state officials, Task Force members, CAC members, and others? Identifying the concerns and desires of a cross section of the population is a difficult task. One proven method of identifying general public sentiment is careful public opinion surveying.

The results of a survey alone do not yield adequate public opinion to guide public policy development. Public opinion surveying, guaranteeing representation from all sectors of society, plus active public participation can yield the best possible measure of community attitudes.

The Massachusetts Coastal Zone Management survey was designed with the Survey Research Program of the University of Massachusetts and the joint center for Urban Studies of Harvard and MIT to provide CZM planners and any other interested groups with a reliable sense of the concerns and opinions of a cross-section of the people in each of the ten coastal regions. Face-to-face interviewing was selected for all but the Greater Boston Harbor region, as not only the most effective means of assuring a good response but also as a constructive catalyst for discussion of important coastal issues. Citizen volunteers, professionally trained in the process of non-directive questioning, formed the nucleus of CZM interviewers. In this way, the survey also provided interested citizens with a chance to become directly involved in coastal zone management and to contribute to the development of an informed and responsive planning program. On a more personal level, the interviewers had an opportunity to talk with new people, to learn about the process of public opinion surveying, and to take the pulse of their own community.

During the winter of 1975-1976, the CZM Public Opinion Survey on Coastal Issues was administered successfully to 945 randomly selected citizens in 81 cities and towns along the Massachusetts coast. 360 of these were obtained by mail from residents of the Greater Boston Harbor area in response to a questionnaire specifically tailored to the Boston Harbor region. The 585 other responses are the result of person-to-person interviewing by citizen volunteers, and supplemented by professional interviewers from the Survey Research Program, and by specially trained regional planning agency staff members.

The CZM staff, the Governor's Task Force, and Citizen Advisory Committee members reviewed the survey results which were used in preparing the citizens perceptions' section of each regional chapter. Survey data and analysis helped in the establishment of staff priorities and the formulation of CZM policies. Local officials and citizens learned more about their own communities from the survey and the CZM staff gained a better sense of the needs of coastal citizens. The survey results highlighted the differences among Massachusetts CZM's ten coastal regions.

See Exhibit K for a discussion of survey procedures and survey analysis. Blank survey copies and a survey Training Manual designed for volunteer interviewers are on file in the CZM office.

In summary, successful public participation requires a multiplicity of activities and organizations. No single group can represent the many audiences of coastal zone management. Each group must have a precise understanding of its role at the beginning of the planning process. Public participation is essentially a political process. Like the coastal resources themselves, the publics of CZM often have competing and conflicting demands. An effective public participation program facilitates discussion, compromise and amelioration of many conflicts. Simply stated, a better plan will evolve from this dynamic human process.

#### PUBLIC INFORMATION AND THE MASSACHUSETTS COASTAL ZONE MANAGEMENT PROGRAM

Education and the dissemination of public information are essential to successful public participation. The more solid information citizens have available, the better equipped they will be to make decisions. The Massachusetts CZM public information program provided timely and meaningful information to various publics.

CZM began its public information effort by establishing the goals of the information/education program: to educate, to facilitate public participation, and to generate support for the CZM program.

The many publics of Massachusetts CZM needed accurate information not only on CZM activities, but on general land and water use planning, on the marine environment, and on management issues. The CZM public information program provided the means for getting CZM reports, maps and studies to the public. It opened the way for two-way communication, and helped establish the network for taking the CZM program public.

Some people stay involved by staying informed. The CZM public information program allowed these people to follow the program's progress and to offer comments or become involved actively if they wished.

A successful educational program can also help to build a supportive political constituency. The overall goal of the education program was to inform citizens and not necessarily to change their opinions and values. CZM had to be seen as a neutral and reliable source of information. This statement on the role of public education helped to build credibility for CZM.

Defining an audience is the next step in information program development. CZM defined several audiences--active participants, passive participants, people who become involved during the final review process, and the existence of a majority of the population who will not become involved at all. The audiences or publics of the Massachusetts Coastal Zone Management program were either staff identified, self identified, or third party identified.

Initially, the staff identified publics it wished to communicate with, such as the Governor's Task Force on Coastal Resources, the state legislature, local officials on planning boards, conservation commissions, and boards of selectmen, mayors, associations and organizations with a coastal tie, such as marina operators, recreational boaters, fishermen, shellfishermen, harbor masters, people in the tourist and real estate industries, tugboat operators, and port-related personnel. Organized civic, commercial, recreation, industrial, trade and environmental groups were also included.

Specifically, names and addresses were collected from the mailing lists of the League of Women Voters, real estate boards, chambers of commerce, the Massachusetts Beach Buggy Association, environmental groups like the Sierra Club and the Association for the Preservation of Cape Cod, the MIT Sea Grant Program, neighborhood associations located in the coastal zone, and many more. Names and addresses of coastal residents who expressed past interest in state and federal planning programs, were added (e.g. State Department of Natural Resources, and the New England River Basins Commission-Southeast New England Study.)

Names and addresses from all these groups and organizations were collected, updated, and organized into an initial mailing list of 6000 names.

Other people become involved by attending CZM meetings, or by learning about CZM through displays, newspaper articles, brochures or by word of mouth. This group enlarged in size over time, and proved to be one of the most active and important audiences of Massachusetts CZM.

Third party identified groups included those people whose names were recommended by other participants in the CZM program. Quite often these people were community and government leaders important to the future success of CZM.

With a potential audience defined, the staff evaluated alternative mass communication techniques to meet CZM goals and the need of various publics. Each audience had different needs and demands. Brochures, direct mail, newsletters, radio and television public service announcements, radio public affairs programs, conferences, workshops, public meetings, press releases, stories for the specialized press and other newsletters, public displays, public opinion surveys, film, educational books and booklets, feature stories, technical and informational reports, and posters were among the tools used by CZM.

The first year CZM public information/education program had three goals: to facilitate and encourage public participation in CZM planning, to define and explain the CZM planning process, and to explain the meaning of coastal zone management. To meet this latter goal, educational materials defined CZM in terms of local issues. These issues included beach access, port redevelopment, harbor management, commercial fishing improvement, water quality, transportation planning, energy facility siting, OCS development and marine ecosystem protection.

Each subject was defined, the problem explored, and potential solutions were related to coastal zone management. A governmental program was thus conceptualized, humanized and localized.

The second year of CZM public information/education built upon the goals of the first year. The planning program grew more technical, and required increasing educational supports. Encouraging public participation continued, but public information activities expanded to include the preparation of educational tools, such as a citizen guide to planning, and a coastal ecosystems and resources book. The emphasis shifted from discussing the components of CZM to reassembling the components into a cohesive whole. This culminated in the completion of the Massachusetts Coastal Zone Management Preview--A Preliminary Program for Public Review.

Massachusetts CZM used many educational techniques to meet its first and second year goals.

#### BROCHURES

Working with MIT Sea Grant Program, CZM prepared an introductory brochure on coastal zone management, entitled, The Massachusetts Coastline-Choice or Consequence. The brochure was designed to introduce the CZM program to Massachusetts citizens. It communicated information about the federal Coastal Zone Management Act of 1972, about the competing and conflicting uses along the fragile and finite Massachusetts coast, and it helped to define options for the future. The brochure also discussed alternative strategies for meeting future coastal demands, and included a description of the citizens' role in CZM planning.

The brochure included a preaddressed reply card. Between eleven and twelve per cent of the brochure recipients returned the cards. Eight thousand copies of the brochure were distributed.

The brochure mailing was accompanied by a cover letter inviting public participation in CZM planning. To reach a wider audience the brochure and a press release describing the CZM program were mailed to every newspaper, radio and television station in eastern Massachusetts. (See exhibit L for a copy of the brochure.)

#### NEWSLETTERS

In February, 1975, CZM began producing a bi-monthly newsletter, called Coast Lines. Coast Lines provided CZM with an avenue to inform citizens about program developments, public participation activities, and planning and management alternatives. As a journal of public participation Coast Lines facilitated citizen and community involvement in coastal land-use planning by putting different regions of the state in touch with one another on coastal zone issues. Readers had an opportunity to "meet" the staff at CZM, the Executive Office of Environmental Affairs, and the Governor's Task Force on Coastal Resources. Coast Lines encouraged two-way communication, too, by offering copies of CZM publications and an opportunity to respond

to questionnaires.

Coast Lines (and the CZM mailing list in general) helped CZM reach an important audience of self-defined, concerned and interested citizens. The regular readers of Coast Lines represented an on-going constituency of informed people. Every other month, Coast Lines reminded this group of CZM program developments; it kept the coastal zone name in the minds of its readers.

Back issues of Coast Lines were used as handouts at public meetings. Occasionally, daily and weekly newspapers printed Coast Lines stories as features, or wrote editorials in response to a Coast Lines piece. The mailing list for the newsletter grew in size from the initial 2500 to 5500 over the two years of active public participation.

The first two issues of the newsletter dealt primarily with public participation information. Names and addresses of local contact people, dates for public meetings, and information about CZM planning methodology, staff structure, and the citizens's role in CZM planning made up the content.

The third, fourth and fifth issues explored political and planning issues. One issue explained OCS oil and gas exploration and development, the federal administrative process leading up to a lease sale, and the state's perspective and developing policy on OCS. The content of another issue explored land use change over time, and included three maps covering the entire Massachusetts shoreline showing land-use changes between 1951 and 1971. The story helped to explain how the maps would be used in CZM planning. One issue of Coast Lines described the problem of increasing recreational access to the Massachusetts coast.

Other issues covered continuing public participating activities and offshore oil and gas development updates. One issue covered CZM's second series of public meetings, while another explored Massachusetts commercial fishing and the 200 mile fisheries zone. In another issue, the question of "management," the way a plan gets implemented, was dissected. This copy of Coast Lines included a questionnaire for citizens to fill out and return to CZM, expressing their needs and concerns, and past history of working under the existing state - local management system.

Continuing the management theme, another issue looked at the evolution and authority of the Martha's Vineyard Commission. An extended issue of Coast Lines served as a summary of the Massachusetts Coastal Zone Management Preview-a Preliminary Program for Public Review. Prepared as a twelve page newspaper tabloid, this issue of Coast Line followed the Program Preview chapter-by-chapter, and ended with a series of questions and answers on Massachusetts Coastal Zone Management. Ten-thousand copies of the Preview Summary were distributed. (See Exhibit M for copies of Coast Lines.)

## PRESS RELEASES

CZM issued press releases before and after every public meeting and many citizen advisory committee meetings, following the approval of each annual grant application, and each time the CZM program/staff was involved in potential news stories such as a state action tied to the 200 mile fisheries zone or OCS leasing. This visibility helped to establish CZM program credibility and helped draw people into CZM public participation activities. News releases helped to keep CZM public and visible.

Radio and television stations used CZM meeting announcement releases as public service spots. Often, CZM press releases led to feature stories, editorials, and half-hour public affairs broadcast programming. (See exhibit N for sample press releases and public service announcements.)

## RADIO AND TELEVISION

People get the majority of their news and information from television and radio. However, the competition for television time is severe, especially in major market areas like Boston.

On Nantucket Island, the local cable television station supported CZM public meetings. The CZM director was featured on the local evening news broadcast on the day of the meeting. Advertisements for the CZM meeting appeared throughout the day of the meeting on the television station. During the winter months, Massachusetts CZM public meetings attracted 1% of the population of Nantucket to its meetings, and captured another percentage of the island's population through television coverage.

The television station covering southeastern Massachusetts, WTEV-channel 6 New Bedford-Providence, covered CZM public meetings in the Buzzards Bay area and occasionally on Cape Cod. Channel 6 covered most CZM news conferences and media events taking place in Boston.

The Boston television stations carried CZM public service spot announcements on CZM public meetings in the greater Boston area. These stations covered major CZM or CZM related news events such as the swearing in of the Governor's Task Force on Coastal Resources, the public presentation of the Program Preview, state actions concerning the wreck of the Argo Merchant off Nantucket Island, and major state actions concerning the 200 mile extended fisheries jurisdiction or OCS oil and gas related issues and events. On these occasions, the CZM name and story was brought before the public.

CZM also used radio broadcasts to reach coastal residents. Prior to each of the two general series of CZM public meetings, the director and/or the public information officer of CZM appeared on a series of public affairs broadcasts. They were generally half hour public affairs programs. The subject matter of the prerecorded program ranged from public participation to specific coastal issues. Such Boston stations as WGBH-FM, WEEI-AM-FM, WERS-FM, and WCOZ-FM broad-

cast programs on CZM.

Non-Boston stations often covered CZM public meetings and interviewed CZM staff members. When time allowed, studio interviews or CZM related programs were arranged with radio stations on Cape Cod, Martha's Vineyard, north and south of Boston, and along Buzzards Bay.

(A third series of radio public affairs programs will occur prior to CZM's third set of public meetings on the CZM plan.)

#### The Specialized Press and Newsletters

Massachusetts CZM took an aggressive stance in seeking out potential audiences for its messages. One manifestation of the complexity of American life is the existence of many thousands of organizations--professional, civic, recreation, education, scientific, political, etc. Each organization has its own system for communicating information and ideas. One way to tap into this information system is to use the newspapers, newsletters and the other publications of organized groups. Specific audiences and subjects can be targeted and reached. Over the past two years, articles on the Massachusetts Coastal Zone Management program have appeared in the newsletters of the Massachusetts Association of Conservation Commissions, the Massachusetts League of Cities and Towns, the League of Women Voters, the Sierra Club, the Massachusetts Environmental Monitor, the EPA Environment Report, the New England Council, and various neighborhood association and Chamber of Commerce publications. Articles on Massachusetts CZM have appeared in weekly shopper newspapers as well. The specialized press, especially boating and sailing magazines and newsletters like New England Offshore and Sailing, have reported on Massachusetts CZM program development.

The use of the specialized press allowed CZM to address an audience with specific needs. The planning and architectural communities have been reached through regional newsletters, and regional and national magazines such as Land Use Planning Report. A lengthy planning magazine article on Massachusetts CZM has been prepared for Practicing Planner, the journal of American Institute of Planners. The Nautilus Press Coastal Zone Management Newsletter carries occasional pieces on Massachusetts CZM, keeping other state and federal interests informed on activities here. In addition, every organization newsletter editor with a potential interest in CZM related activities receives Coast Lines.

The use of the specialized press is an important ingredient in an overall information/education program. Newsletters reach a small but interested audience. An organization newsletter has high credibility and high readership among it's audience. In a world of competing messages, there is a greater likelihood that a piece will be read in the specialized press. (See exhibit O for sample stories from the specialized press).

#### PUBLIC MEETINGS

While already addressed in the public participation part of this appendix, public meetings meet an informational need, and serve as a



catalyst for media coverage.

Calling a public meeting guarantees press coverage prior to the event. Reporters will often cover the meeting, or use a prepared press release to write a follow-up story about CZM's efforts. Massachusetts CZM found weekly community newspapers more open to continuous and longer stories than daily newspapers. However, both formats carried meeting announcements and followup pieces. Public meetings provided an opportunity for radio and television public service announcements (PSA's). The high visibility of the CZM name in the minds of editors and news directors facilitated the coverage of CZM issues.

Besides public meetings, CZM held or attended literally hundreds of other public gatherings. The CZM staff accepted requests for public speakers and often sought invitations to speak before specific audiences. Like targeting messages for the specialized press, specific and desired audiences can be reached in person through conferences, workshops, speaking engagements and meetings. The entire CZM staff participated in these meetings, often coordinated by the public information staff.

In the past year, CZM staff members helped organize and run four workshops. The Coastal Review Center conducted a workshop on structural and non-structural solutions to erosion and flood control problems in coastal areas. Workshops on various aspects of outercontinental shelf oil and gas exploration and development have been held in southeastern Massachusetts, Cape Cod, Martha's Vineyard and Nantucket. A workshop on oil spill clean up techniques and liability and a seminar on erosion problems on Martha's Vineyard were organized by the CZM staff. Many times new audiences came together to share ideas and information with the CZM staff.

Each year, the Massachusetts League of Women Voters hold a "Fall Meeting" to set a work program for the year and evaluate current issues. Massachusetts CZM information staff members have addressed the fall meeting for the past two years. Under a grant from the Massachusetts Council for the Humanities and Public Policy, the state League has conducted a series of workshops on growth and land use issues this year. CZM staff members attended each of these seminars. CZM was a subject at each one. A member of a Task Force committee gave a CZM talk at the southeastern Massachusetts meeting. A CZM staff member spoke at the north shore meeting. CZM staff members gave one of three keynote addresses at the greater Boston Harbor meeting. Another member of a CZM Task Force committee organized the Cape Cod meeting. In both the fall meetings and the workshop series, a group of concerned and intelligent people gathered to address pressing political and social issues, and CZM was present.

It is difficult to recount all the individual groups addressed during the CZM planning period. However, representative groups included: The Boston Harbor Associates, Boston Harbor Pollution Committee, the South Shore Chamber of Commerce, the Cape Cod Chamber of Commerce, the Boston University School of Law, various classes at the Harvard Graduate School of Design and the Graduate School of Public Administration, the Barnstable County Selectmen's Association,

various real estate boards, beginning with the Cape Cod Board of Realtors, the greater Boston Chamber of Commerce, The Executive Committees of the Cape Cod Planning and Economic Development Commission, the Nantucket Planning and Economic Development Commission, the Southeastern Regional Planning and Economic Development District, the Martha's Vineyard Commission, the Massachusetts Marine Trades Association, the New England Regional Council, the Lt. Governor's 200 Mile Fisheries Workgroups, the Governor's Development Cabinet, the Boston Redevelopment Authority, the Sierra Club, Massachusetts Audubon Society, the Marblehead Garden Club, the National Secretaries Association, the Charter Boat Operators Association, the Associated General Contractors of Massachusetts executive directors, the Martha's Vineyard Shellfish Constables Association, the Massachusetts League of Cities and Towns, and the Massachusetts Association of Conservation Commissions.

Prior to formal submission of its plan to the U.S. Department of Commerce, CZM held a workshop for Task Force members, Task Force committee members, Citizen Advisory Committee members, and other interested citizens to review the individual segments of the plan.

In each public appearance, CZM opened lines of communication, established credibility for coastal zone management and passed on important information and ideas. It was important for CZM to seek out organized groups and address their immediate needs and concerns. In every public forum, CZM invited the audience to join the public participation effort under way, and to lend their experience and knowledge to insure a viable CZM plan.

#### DIRECT MAIL

At each public gathering and workshop, CZM collected the names and addresses of people who wanted continuing information on the CZM program. Over an eighteen month period, the refined CZM mailing list grew from 2500 to 5500 names. This list represented a wide variety of interests, needs, organizations and concerns.

To attract large numbers of people to CZM public meetings, personal invitations were sent region-by-region to the people on CZM's mailing list. This technique proved more effective than newspaper stories and radio and television spot announcements at getting people to attend meetings. The letters represented a personal human touch, and insured that at a minimum, this important audience of CZM would know about CZM meetings and related workshops.

In addition, each mass mailing of CZM reports, booklets, and brochures included a direct mail cover letter. The letters personalized the publication and invited further comment and participation. (See exhibit P for sample direct mail pieces.)

#### STAFF REPORTS AND MAJOR PUBLICATIONS

Throughout the CZM planning period, a variety of reports, studies, fact sheets and special publications have been prepared. All CZM materials are public. Six months into the planning program, a report

entitled, Massachusetts Coastal Zone Management: A Program in Progress was prepared. Over a thousand copies were distributed to citizens and officials interested in the early development of CZM in the Bay State. This twenty-three page paper covered the planning program, the Coastal Review Center, and the public participation and education program of CZM. (See exhibit Q for a copy.)

The success of this early publication convinced the CZM staff to develop a Massachusetts Citizen's Handbook for Coastal Zone Management Planning -- Living by the Sea. If citizens were going to do all that we planned to ask of them throughout the development of the CZM plan, they would need information and guidance. Living by the Sea introduced citizens to the CZM program, described the program's goals and objectives and potential roles and activities for participants in CZM planning. The publication explained how maps would be used by both citizens and planners. The book described the major areas for planning work and public value setting and decision making. Included were discussions on alternative CZM boundaries, natural and economic resources of critical concern (general areas of particular concern) the uses of the coast (priority setting), and management options to move from planning to action. Living by the Sea appendices included a glossary of coastal terms, a background piece and description of the federal Coastal Zone Management Act of 1972, a story on the CZM Coastal Review Center, the names of the members of the Governor's Task Force on Coastal Resources, and the names and addresses of regional planning agency staff people under contract to CZM for public participation work.

For over 5000 readers, this comprehensive booklet reaffirmed CZM's commitment to public participation. Citizens had received a hands-on tool to facilitate their work. (See exhibit R for a copy of Living By the Sea.)

Living By the Sea had a sister publication entitled Ecosystems and Resources of the Massachusetts Coast. Prepared by the Institute for Man and Environment at the University of Massachusetts at Amherst, and edited and reviewed by the CZM staff, Ecosystems met the vital need of having a single source publication describe the wealth and diversity of the natural systems of the Massachusetts coast, the inter-related and fragile nature of coastal ecosystems, and establish the educational base for decision making.

Ecosystems had four main subject areas: the geology of the Massachusetts coast, the living systems of the coast, coastal resources and their cultural uses, and future planning and research for coastal zone management. Following a description of such living systems as salt marshes, sand dunes, sand beaches, rocky shores, eelgrass beds, salt ponds, barrier beaches and islands, and estuaries, were a set of regional maps depicting the resources and ecosystems of the Massachusetts coast. Sandy beaches, rocky shores, salt marshes, tidal flats, salt ponds, barrier beaches, estuaries, and dune environments or maritime forests were mapped, and utilities, water-related structures, institutional waterfront uses, commercial/transportation activities, marinas, and fishing ports identified on the maps.

Like Living By the Sea, Ecosystems proved to citizens CZM's commitment to inform and educate in order to further public participation goals. For citizens and officials who swim, boat or walk the Massachusetts coast, Ecosystems helped to explain and describe what they saw, and helped describe the relationship between man and other living things. Ecosystems proved very popular as a learning aid for teachers and students. (See exhibit S for a copy of Ecosystems.)

Other CZM reports met other vital informational needs. The planning staff produced a continuing informational series called Survey of Uses. The uses evaluated in the individual reports included housing, commercial activities, major industrial uses of the coast, agriculture and aquaculture, commercial fisheries, water-borne transportation, institutional and military uses of the coast, utility use of the coast, and recreation. Overall, the Survey helped suggest priority uses in the coastal zone and permissible uses for critical resource areas.

Other reports covered deep water port needs, and refinery needs in Massachusetts. A large number of reports and public documents were prepared on various aspects of the onshore, near shore, and offshore aspects of outer continental shelf oil and gas exploration and development. OCS Development and Massachusetts: A Preliminary Assessment received wide-distribution and acclaim. Facts about Offshore Oil and Gas Development on Georges Bank, and OCS Update were two reports written for the public; hundreds of each publication were distributed.

Major state actions written up as reports were widely distributed. Massachusetts's review of the draft Environmental Impact Statement for North Atlantic Lease Sale #42, and the state response to the Call for Nominations for the Mid-Atlantic Lease Sale #49, represent just two such CZM efforts.

A thousand colored copies of An Atlas of Resources on Georges Bank and Nantucket Shoals have been distributed in the past year, as a part of a citizen publication on Georges Bank OCS activities.

To meet a pressing need for public information on the onshore impacts of OCS development, CZM and the Office of State Planning initiated a technical assistance manual series. The first report, Heliports, covered heliport siting needs. The second report in the series, Offshore Oil Development: Implications for Massachusetts Communities, covered a wide gamut of OCS-related activities. The booklet covered the administrative procedures leading up to a lease sale, federal safety activities during leasing, the three phases of petroleum development - exploration, development and production - and the potential impacts of OCS development. The text evaluated the oil facilities related to offshore development and the impacts of oil-related development on communities. The copy explored potential conflicts between the fishing and oil industries, and the issues surrounding oil spills and OCS development. The book offered direct assistance to communities wishing to manage new growth from OCS activities. A glossary defined OCS-related terms, and an appendix suggested state and local

powers that might apply to OCS-related development.

Over 500 copies of a CZM planning paper on Alternative Management Boundaries were distributed. The paper explained ten different boundary possibilities, and served as a guide for citizens interested in the subject and making boundary decisions for the region.

As the management program progressed, the CZM staff published two papers on the role and responsibility of various agencies and departments within the Executive Office of Environmental Affairs. A thousand copies of a paper on the overall operations of the executive agency were distributed. Some five hundred copies of a paper detailing agencies and their functions and responsibilities were distributed.

Hundreds of copies of Massachusetts' three past applications for Section 305 funding under P.L. 92-583 have been distributed upon request.

The Coastal Review Center, the action arm of the CZM program, has prepared many reports evaluating coastal problems along the Massachusetts shore. The CRC prepared a major study on dredging called Review of Dredge and Spoil Disposal Practices in Massachusetts, and distributed some 500 copies. This report evaluated dredging techniques, and the problems faced in the disposal of spoil in the state. Responding to proposals for spoil dumping at Brown's Ledge off Southeastern Massachusetts, the CRC prepared a report, "Fall River Harbor Improvement Dredging Project and Fall River and Providence River Harbors Dredging Actions with Ocean Disposal at Brown's Ledge," evaluating alternatives to the Brown's Ledge ocean dumping site.

The CRC prepared a report entitled, "Final Position Paper on Proposed Sewering of Humarock Beach in Scituate," establishing CZM's position on sewerage this barrier beach, with recommendations.

Based on another local project, the CRC produced "A Report on the Army Corp of Engineers final Environmental Impact Statement for the Proposed Cee-Jay Pier and Marina in Provincetown, Mass."

The Coastal Review Center played a major role in helping to establish state policy on pressing issues. The CRC prepared a study, "A Massachusetts Report on Oil Spill Prevention and Response--the Legal, Administrative, Technical, and Regulatory Aspects", for use by federal and state government. Earlier, the CRC had produced a report, "Preliminary Draft Report on Oil Spills and Liability."

In most cases, though technical, the CRC studies were read by local, federal, regional, and state officials; and interested citizens in each problem area. Like the CRC itself, CRC reports represent state CZM response to local problems. CRC reports are covered by the press, and validate CZM-community interaction and response. (See Exhibit T for sample staff reports and special publications.)

As previously mentioned, Massachusetts CZM prepared and distributed 1500 copies of the Massachusetts Coastal Zone Management Preview--A Preliminary Program for Public Review, and 10,000 copies of a preview summary.

To better understand the state's environmental regulatory activities and administrative structure, CZM worked with the Department of Environmental Quality Engineering (DEQE) to prepare and Environmental Engineering Directory, as a guide to the programs and activities of this agency. A thousand copies of the Directory have been distributed to business leaders, town clerks, union leaders, and various government agencies. An additional five thousand copies will be printed during the Spring 1977. The Directory outlines the step-by-step procedures for DEQE permit reviews, and includes a description of the decentralized and streamlined permitting process. Massachusetts' CZM effort relies in part on the authorities vested in DEQE. Distributing the Directory helped to facilitate CZM program implementation with all those involved in the state's environmental regulatory activities. (See exhibit U for a copy of the Environmental Engineering Directory.)

#### PUBLIC DISPLAYS

Meeting people in their own environment and capturing their imagination and interest is an important aspect of any public information program. Public displays help to attract and inform citizens. A single display can be viewed by thousands of people. If a return card or other feedback mechanism is included with the display, viewers can ask for more information about the program or public participation. For the essential goal of informing citizens about the existence and substance of the CZM program at a low cost per thousand viewers, displays in public places are an effective communications medium.

CZM constructed two different series of displays, one for the first year content of the program and one for the second. A separate display on offshore oil and gas development was prepared, as well as a general descriptive display on the CZM program for use at meetings, conferences and other short term gatherings. (A third series of displays will be built to describe the CZM plan.)

CZM's first display introduced the program and its issues. Standing about seven feet tall, the free standing display had ten viewing sides. Consistent with the first year theme of localizing CZM issues, the display elaborated on OCS development, beach access, commercial fishing, recreation, harbor management, the marine environment, and energy facilities siting. One panel introduced coastal zone management, and another described CZM public participation and included a pre-addressed reply card for those requesting more information. Four separate displays were constructed. The names of local people to contact for public participation purposes varied with the displays for different CZM regions.

The displays were exhibited in public places such as the Liberty Tree Mall, the North Shore Mall, the Hanover Mall, the Dartmouth Mall, the Cape Cod Mall, the Prudential Building in Boston, the State House, the Woods Hole Oceanographic Institution lobby, the Hyannis Public Library, the Boston Hynes Auditorium Sportsmen and Camping

Show, in the offices of regional planning agencies, some town halls and other coastal library centers.

The second series of displays paralleled local Citizen Advisory Committee activities, and informed citizens of CAC work. Three displays were built, one for Cape Ann - Ipswich Bay, one for the lower north shore, and one for the south shore. Each free standing display had three two-sided panels formed in a star shape. The content of the displays concerned critical areas designation.

The panels described the CZM program; the need to designate critical areas and the CAC role in this process; and the critical categories of erosion prone, recreation, visual areas. Also included were local photographs and a map of the area identifying potential critical areas and a reply card for those seeking more information.

The displays stood in public places like the Hanover Mall, the Gloucester town library, the Newburyport YMCA and other town halls and libraries.

#### FILM

On numerous occasions, CZM showed the NOAA-OCZM film, It's Your Coast to groups of citizens and/or officials. While not meeting the specific needs of Massachusetts, the film often triggered discussion among audiences trying to learn more about CZM. The CAC's on Cape Cod, Plymouth Bay, and Greater Boston Harbor viewed the film. Various Rotary Clubs, garden clubs and other civic organizations saw the film as well. The state League of Women Voters showed the film to an audience of 150 at a CZM land use conference in Boston. The film served as a good graphic introduction to coastal zone management, spurred discussions, and allowed Massachusetts CZM staff to localize the film to the Bay State.

#### POSTERS

A poster was prepared prior to the first set of public meetings to announce the time and location of the meetings. The posters were placed in town halls, libraries, institutions, and store windows, and informed or reminded citizens of CZM meetings. The posters worked most effectively in rural areas, most notably on Cape Cod, Martha's Vineyard and Nantucket.

(A second poster will be prepared to announce the third series of public meetings in the summer 1977.)

#### CONCLUSION

The public information and education efforts of the Massachusetts Coastal Zone Management program were designed to prevent communication problems by providing accurate information to many different audiences. The public information efforts were tied to the planning and participation program and were directed at building public knowledge and involvement. Many techniques were used; many thousands of citizens and officials were reached. In turn, citizens shared their knowledge and experience with CZM and helped ensure a successful and fruitful CZM

planning program. Improving the CZM plan was the goal of the myriad information/education/participation projects and activities.



PUBLIC PARTICIPATION/INFORMATION APPENDIX: EXHIBITS

- A List of Task Force Members
- B Dates of Task Force Meetings
- C List of Task Force Committees Membership
- D List of Meeting Dates, Invitations, Attendance and Sample Press Releases
- E \*Sample Map of Chatham, Massachusetts
- F \*Checklist for Reviewing CZM Maps and Charts
- G \*"Which Are the Most Important Coastal Resources in Your Community?"
- H \*Boundary Worksheet
- I \*Management Systems Questionnaire
- J \*Local Growth Policy Questionnaire
- K Survey Procedures, Survey Analysis, Blank Survey Copies and a Survey Training Manual Designed for Volunteer Interviewers
- L \*"Massachusetts Coastline-Choice or Consequence?"
- M \*Coast Lines
- N \*Sample Press Releases and Public Service Announcements (See also Exhibit D)
- O \*Sample Stories from the Specialized Press
- P \*Sample Direct Mail Pieces
- Q \*"Mass. Coastal Zone Management: A Program In Progress"
- R \*Living By The Sea
- S \*Ecosystems and Resources Of The Massachusetts Coast
- T \*Staff Reports and Special Publications
- U \*Environmental Engineering Directory

\*on file in the CZM Office

EXHIBIT A

GOVERNOR'S TASK FORCE ON COASTAL RESOURCES

Thomas B. Arnold, Esq.  
Attorney

George B. Bailey  
Exec. Committee, MAPC

Nicola Barletta  
Mass. League of Cities & Towns

Dr. Leo Beranek  
President, WCVB-TV

Garen Bresnick  
Mass. Homebuilders Assoc.

John Buckley, NE Petroleum  
Development Co., Inc.

Senator William Bulger  
(D-Boston)

Earle Carter, New Bedford  
Property Conservation Dept.

John Devanney  
MIT Sea Grant

Charles Downe  
Charles Downe Assoc.

Rep. Richard Dwinell  
(D-Millbury)

Mrs. Barbara Fegan  
Wellfleet, Massachusetts

Joseph S. Fitzpatrick  
Greater Boston Chamber of  
Commerce

William Flynn, Secretary  
Exec. Office of Communities  
& Development

Omer Godin  
Mass. Beach Buggy Assoc.

Frank Gregg, Chairman  
N.E. River Basins Comm.

Philip Herr  
Philip Herr Assoc.

James Howell  
First National Bank  
of Boston

Frank Keefe, Director  
Office of State Planning

Rep. Richard Kendall  
(D-Falmouth)

Roberta Leary  
League of Women Voters  
Land Use Committee

Frank Lee  
Boston Edison

Rep. Garreth Lynch  
(D-Westfield)

Joseph Magaldi, Secretary  
Mass. Fed. of Planning  
Boards

Byron Matthews, Mayor  
City of Newburyport

Dr. George Mathiessen  
Marine Research, Inc.

Kelly McClintock  
Conservation Law Foundation

Senator Alan R. McKinnon  
(D-Weymouth)

Dr. Norton Nickerson  
Pres., Mass. Assoc. of  
Conservation Comm.

Richard Paine  
Barnstable County  
Selectmens Assoc.

Richard Preston, AIDC  
Education Foundation

EXHIBIT A (cont.)

Leo Rabinowitz  
Winthrop, MA.

Martha Reardon  
South Shore Chamber of  
Commerce

Senator William Saltonstall  
(R-Manchester)

Fred Salvucci, Secretary  
Exec. Office of Transpor-  
tation & Construction

Howard Smith, Secretary  
Exec. Office of Manpower  
Affairs

Christine Sullivan  
Exec. Office of Consumer  
Affairs

Harold P. Swain  
New England Fisheries  
Steering Committee

Rep. Henry Walker  
(R-Salisbury)

Phillip Ziegler  
Boston Harbor Assoc.

EXHIBIT B

GOVERNOR'S TASK FORCE ON COASTAL RESOURCES MEETINGS

<u>1974</u>	<u>1975</u>
February 15	January 16
February 28	February 20
March 15	March 20
March 20	April 17
April 10	June 26
May 16	September 18
June 20	December 18
July 18	<u>1976</u>
August 19	April 14
September 19	June 21
October 17	December 9
November 21	December 16
December 20	<u>1977</u>
	March 10

EXHIBIT C

PUBLIC PARTICIPATION COMMITTEE

Mrs. Judith Barnet  
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Mrs. Barbara Fegan  
Silver Spring Hill  
South Wellfleet, MA 02663

Senator William L. Saltonstall  
State House - Room 321  
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SRPEDD  
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EXHIBIT D-1

General Public Meetings

I. Series 1--February-May 1975

		APPROX:
2/18/75	Plymouth-Duxbury-Kingston	45 participants
2/24/75	Mt. Hope Bay Region	45 "
2/25/75	Cape Cod	75 "
2/26/75	Upper North Shore	35 "
2/27/75	Buzzards Bay	51 "
3/20/75	South Shore Region	55 "
3/26/75	Upper North Shore	40 "
4/10/75	Nantucket	35 "
4/17/75	Weymouth, Braintree, Quincy Milton	30 "
4/24/75	Lower North Shore	40 "
5/1/75	Martha's Vineyard	45 "
5/8/75	Boston Harbor	45 "

II. Series 2--November-December 1975

11/3/75	South Shore Region	50	"
11/6/75	Cape Cod	150	"
11/10/75	Lower North Shore	35	"
11/13/75	Upper North Shore	45	"
11/17/75	Mt. Hope Bay	25	"
11/18/75	Buzzards Bay	75	"
11/20/75	Plymouth-Kingston-Duxbury	35	"
12/10/75	Martha's Vineyard	50	"
12/11/75	Nantucket	40	"

D-2

CAPE COD

CITIZEN ADVISORY COMMITTEE MEETINGS

1975

October 2

October 7

November 18

December 16

1976

January 20

February 17

March 16

April 4

April 27

May 18

October 5

October 19

November 9

November 30

December 14

1977

January 4

February 1

February 8

March 1

March 15

LOCAL TOWN MEETINGS

October 27, 1975

Truro

October 28, 1975

Orleans

October 29, 1975

Yarmouth

October 30, 1975

Sandwich

An additional 50 local town-by-town meetings were held in 1976 and 1977.

Greater Boston Harbor Public Meetings

CZM Ad Hoc Committee on Boston Harbor:

1976

October 26

November 15

November 29

December 13

1977

January 3

January 10

January 17

January 24

January 31

February 7

February 14

February 24

11/23/76: Boston Harbor Associates Annual Meeting  
Subject: CZM

2/26/77 : League of Women Voters Conference on Coastal Zone  
Management---Greater Boston Harbor Area

MOUNT HOPE BAY

CITIZEN ADVISORY COMMITTEE MEETINGS

<u>1976</u>	<u>1977</u>
June 24	January 6
July 15	January 20
August 19	February 10
September 16	February 24
October 21	
November 8	
November 29	
December 8	

LOCAL TOWN MEETINGS

October 28	Berkley
November 4	Dighton
December 14	Freetown
January 13	Dighton
January 17	Fall River
January 17	Freetown
January 22	League of Women Voters

D-5

BUZZARD'S BAY

CITIZEN ADVISORY COMMITTEE MEETINGS

1976

June 15

July 14

August 11

September 8

October 13

November 10

December 1

December 14

1977

January 5

January 27

February 2

February 16

February 23

March 3

LOCAL TOWN MEETINGS

December 7

January 5

January 11

January 24

February 2

February 3

Mattapoisett

Fairhaven

Marion

Westport

New Bedford

Wareham

D-6

PLYMOUTH BAY

CITIZEN ADVISORY COMMITTEE MEETINGS

1976

July 29

August 26

September 23

October 21

November 10

December 15

1977

January 5

January 19

Page b-43: The following date was omitted from the list of Local Town Meetings:

August 26 Cohasset

CITIZEN ADVISORY COMMITTEE MEETINGS

<u>1976</u>	<u>1977</u>
March 3	January 5
March 18	January 6
April 15	January 19
May 20	January 20
June 23	
July 29	
August 26	
September 23	
October 21	
October 28	
November 10	
November 23	
December 15	
December 16	

LOCAL TOWN MEETINGS

January 22	League of Women Voters
August 30	Marshfield
September 15	Norwell
September 22	Scituate
September 27	Pembroke
February 16	League of Women Voters



MARTHA'S VINEYARD

Review of Program Preview and Regional Chapter

December 6, 1976	West Tisbury Planning Board reviews Program Preview
December 8	Martha's Vineyard Commission reviews Program Preview and public meetings
December 14	Edgartown Selectmen reviews Program Preview
December 16	Martha's Vineyard Commission reviews Management
December 20	Martha's Vineyard Commission reviews Management
February 3, 1977	Regional Chapter
February 10	Martha's Vineyard Commission reviews Map Commentary
February 17	Public Meeting on Regional Chapter and Martha's Vineyard Commission
February 24	Martha's Vineyard Commission reviews Map Commentary and Regional Chapter approved
March 3	Martha's Vineyard Commission reviews Management
1976	Martha's Vineyard Commission meets every Thursday night for the entire year
1975	Martha's Vineyard Commission meets once or twice a month this first year

All Islands Shellfish Constables Association, a group organized by Coastal Zone Management, meets once a month for 2 years.

Shellfish Management Group meets every 3 months (quarterly).

(Coastal Zone Management will sponsor a Sea Scallop Conference,  
March 5, 1977)

LOWER NORTH SHORE

CITIZEN ADVISORY COMMITTEE MEETINGS

1976

October 18

November 9

December 9

1977

January 13

January 27

UPPER NORTH SHORE

CITIZEN ADVISORY COMMITTEE MEETINGS

1976

October 20

November 17

December 8

1977

January 12

January 26

February 9

Page b-45:

The following dates were omitted from the list of Citizen Advisory Committee Meetings:

Lower North Shore  
1976

March 2

March 11

April 8

May 18

June 22

Upper North Shore  
1976

March 4

April 1

June 16

D-10

NORTH SHORE

LOCAL TOWN MEETINGS

July 22, 1976	Nahant
July 26	Marblehead
August 4	Salisbury
August 25	Newbury/Newburyport
August 31	Saugus
September 7	Gloucester
September 7	Ipswich
September 22	Manchester
September 30	Essex
September 30	Swampscott
October 12	Salem
October 19	Lynn
October 25	Rockport
October 26	Rowley
November 16	Beverly
February 16, 1977	Danvers

NANTUCKET PUBLIC MEETINGS

On the Second Thursday of each month, the Nantucket Planning and Economic Development Commission held public meetings. As the CZM public participation group for Nantucket, each of these meetings were CZM or CZM related gatherings for the 30 month planning period.

Eight public workshops were held during the fall 1976 on zoning. Three public hearings were held on zoning.

## EXHIBIT K

### PUBLIC OPINION SURVEY

#### A. Background and Purpose

Massachusetts CZM took its commitment to broad public participation directly to the people. While land use planning decisions are based in large part on factual data and scientific information, the decisions have their ultimate impact on the daily lives of the people who live with them. CZM solicited the thoughts and feelings of coastal citizens through public meetings, the Governor's Task Force, Citizen Advisory Committees, mailings, and meetings with small groups. These avenues of public involvement guarantee a forum for organized groups, or for people with an issue, problem, or idea to discuss. Often, the citizens and officials who involve themselves in the CZM planning programs have a keen interest in coastal resource activities, development and government. But what about those people who don't go to evening meetings or don't belong to any group, but make their livelihood along the shore or just enjoy an occasional day at the beach?, or people who use the resources of the coastal zone but live elsewhere in the state? How are their values and needs to be communicated to state officials, Task Force members, CAC members, and others? Identifying the concerns and desires of a cross section of the population is a difficult task. One proven method of identifying general public sentiment is careful public opinion surveying.

The Massachusetts Coastal Zone Management survey was designed with the Survey Research Program of the University of Massachusetts and the joint center for Urban Studies of Harvard and MIT to provide CZM planners and any other interested groups with a reliable sense of the concerns and opinions of a cross-section of the population in each of the ten coastal regions. Face-to-face interviewing was selected for all but the Greater Boston Harbor region, as not only the most effective means of assuring a good response but also as a constructive catalyst for discussion of important coastal issues. Citizen volunteers, professionally trained in the process of non-directive questioning, formed the nucleus of CZM interviewers. In this way, the survey also provided interested citizens with a chance to become directly involved in coastal zone management and to contribute to the development of an informed and responsive planning program. On a more personal level, the interviewers had an opportunity to talk with new people, to learn about the process of public opinion surveying, and to take the pulse of their own community.

During the winter of 1975-1976, the CZM Public Opinion Survey on Coastal Issues was administered successfully to 945 randomly selected citizens in 81 cities and towns along the Massachusetts coast. 360 of these were obtained by mail from residents of the Greater Boston Harbor area in response to a questionnaire specifically tailored to the Boston Harbor region. The 585 other responses are the result of person-to-person interviewing by citizen volunteers, and supplemented by professional interviewers from the Survey Research Program, and by specially trained regional planning agency staff members.

For purposes of evaluating survey responses, the Massachusetts coast was divided into 10 regions, the same regions used for planning purposes by CZM. The two Boston Harbor regions (7 & 8) recieved a special mail questionnaire, which contained some questions specific to the regions and omitted many questions included on the longer forms administered face-to-face in the other 8 regions. In discussing survey responses, Boston area responses are not included with non-Boston responses. A separate discussion on the responses from the regions 7 and 8 follows the general survey analysis. Some questions are specific only to the greater Boston area.

A number of terms appear throughout the survey analysis to describe geographic divisions "Your general area" refers to one of the ten coastal regions (see map). "Your community or neighborhood" refers to the community in which the respondent was interviewed or answered the mail survey. The term "coastal zone" refers to an area of coastal land and water extending about three miles out to sea and extending about a half mile inland (including the land along major rivers).

Throughout the survey analysis, averages are given for the entire sample in the interview survey, followed by some regional statistics. The regional statistics are given when the response from a region is beyond the norm. If a region is not mentioned, the region's responses to a given question were within the norm.

Throughout the survey, region ten (10), the upper north shore, is referred to as Cape Ann - Ipswich Bay.

#### PROCEDURES

The Sample for the CZM Survey was drawn by scientific random sampling procedures from the most recently available street listing for almost all of the 81 cities and towns in Massachusetts' coastal zone. In a few cases, a street listing prepared within the last 2 or 3 years was unavailable and voting lists (especially on Martha's Vineyard and Cape Cod) or, in one instance, the telephone book were used. Generally, a sample of approximately 300 names was drawn for each region in the hope of obtaining a 1/3 response rate, providing 100 respond for each region.

Using the street listings as a source for the sample meant that we had a universe of all the residents (both summer and full-time) of the communities included. Interviewers were instructed to interview any adult (over 17) member of the household chosen at random. No substitutions were allowed, assuring not only that the sample was controlled but that those interviewed had been living for at least a year in the community in which they were interviewed.

The response rate varied from region to region. Responses were generally well distributed among the towns in each region, however, Exceptional difficulty in obtaining interviews was encountered only

in the cities of Fall River and New Bedford, where people were either unavailable or claimed they spoke no english. Table #1 below shows the regional break-down of the 81 cities and towns included in the survey, and the source from which the sample was drawn. Table #2 shows the sampling rate and the response rate for each region.

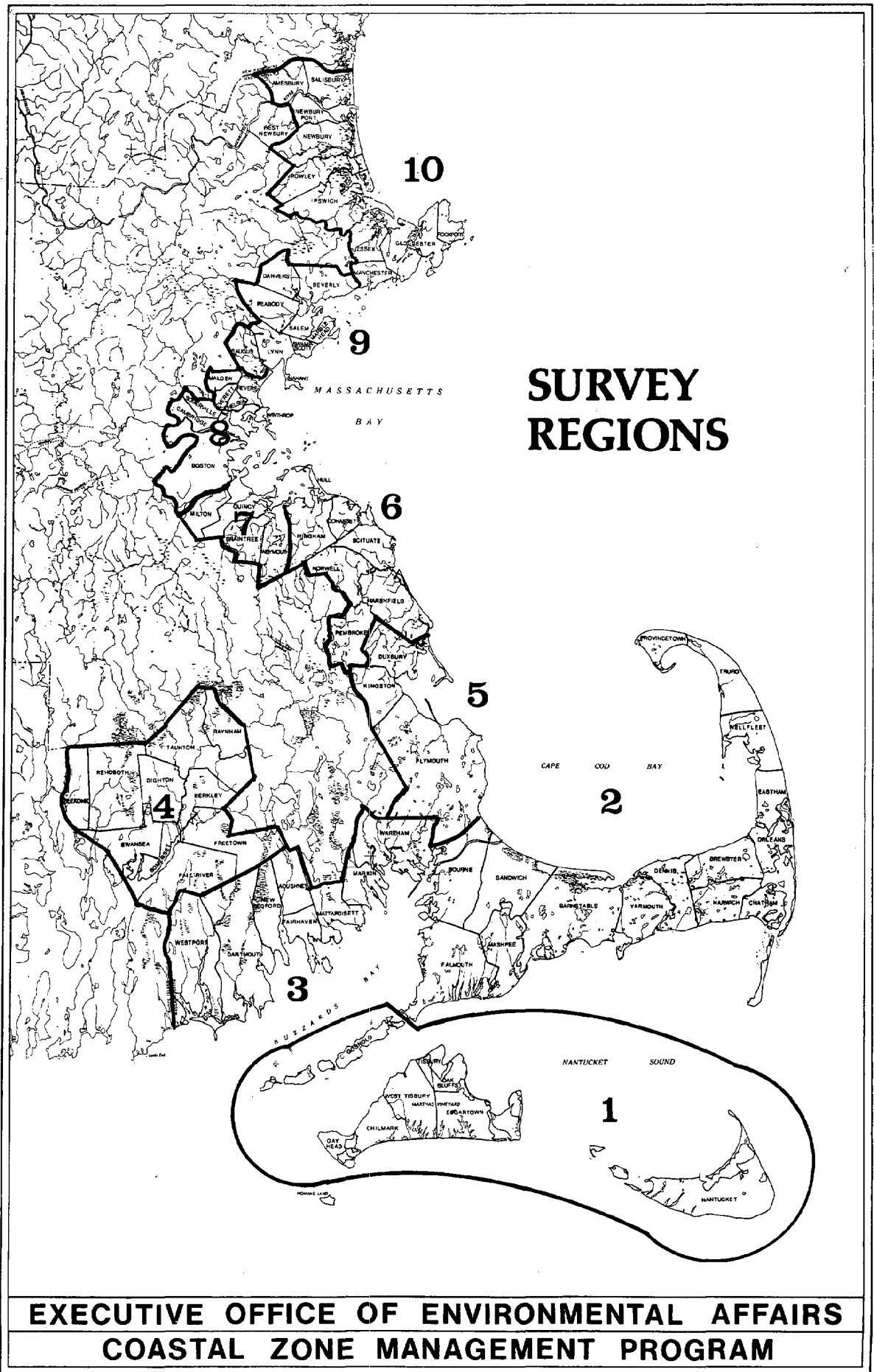




TABLE #1

81 Communities

REGION 1 - ISLANDS

Nantucket	1975 street listing
Edgartown	1975 voter list
Oak Bluffs	1975 voter list
Tisbury	1975 voter list
West Tisbury	1975 voter list
Chilmark	1975 voter list
Gay Head	1975 street listing

REGION 2 - Cape Cod

Bourne	1975 street listing
Falmouth	1975 street listing
Sandwich	1975 street listing
Mashpee	1975 voting list
Barnstable	(Jan. 1) 1975 street listing
Yarmouth	
Dennis	1975 voter list
Brewster	1975 street listing
Harwich	1975 street listing
Chatham	1975 street listing
Orleans	1975 street listing
Eastham	1975 voter list
Wellfleet	1975 street listing
Truro	1975 voting list
Provincetown	1973 street listing

REGION 3 BUZZARDS BAY

Westport	1975 street listing
Dartmouth	1975 street listing

New Bedford	1975 voting list
Acushnet	1975 street listing
Fairhaven	1975 street listing
Mattapoisett	1975 street listing
Marion	1975 street listing
Wareham	1975 street listing

REGION 4 - MT. HOPE BAY

Freetown	1975 street listing
Fall River	1975 street listing
Somerset	1975 street listing
Swansea	1975 street listing
Dighton	1975 street listing
Berkley	1975 voting listing
Raynham	1975 street listing
Taunton	1975 voter listint
Rehoboth	1975 street listing
Seekonk	1975 street listing

REGION 5 - PLYMOUTH - DUXBURY

Plymouth	1975 street listing
Kingston	1975 street listing
Duxbury	1975 street listing

REGION 6 - SOUTH SHORE

Hull	1975 street listing
Hingham	1975 street listing
Cohasset	1975 street listing
Scituate	1975 street listing
Norwell	1975 street listing
Hanover	1975 street listing
Marshfield	1975 street listing

REGION 6 SOUTH SHORE (cont.)

Pembroke	1975 street listing
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REGION 7 - QUINCY

Weymouth	1975 street listing
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Braintree	1975 street listing
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Quincy	1975 street listing
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Milton	1975 street listing
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REGION 8 - BOSTON

Everett	1975 street listing
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Chelsea	1975 street listing ("List of Persons Assessed")
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Winthrop	1975 street listing
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Revere	1975 street listing
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Boston	1975 street listing
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REGION 9 - NORTH SHORE

Saugus	1975 street listing
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Lynn	1975 street listing
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Nahant	1975 street listing
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Swampscott	1975 street listing
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Marblehead	1975 street listing
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Salem	1975 street listing
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Peabody	1975 street listing
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Danvers	1975 street listing
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Beverly	1975 street listing
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REGION 10 - CAPE ANN/IPSWICH BAY

Essex	1975 street listing
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Manchester	1975 street listing
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Gloucester	1975 street listing
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Rockport	1975 street listing
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Ipswich	1975 street listing
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REGION 10 - CAPE ANN/IPSWICH (cont.)

Rowley	1975 street listing
Newbury	1975 street listing
Newburyport	1975 telephone directory
Salisbury	1975 street listing
Amesbury	1975 street listing
West Newbury	1975 street listing
Merrimac	1975 "census" (street listing)

TABLE II

REGION	SELECTION RATE	DRAWN	OBTAINED
I (Islands)	34	307 135-Nantucket 172-Vineyard	95
II (Cape)	235	346	64
III (Buzzards Bay)	443	230	49
IV (Mt. Hope Bay)	471	304	57
V (Plymouth- Duxbury)	108	322	102
VI (South Shore)	237	291	77
VII (Quincy area)	528	313	127
VIII (Boston area)	913	560	233
IX (Lower No. Shore)	767	280	68
X (Cape Ann/Ipswich Bay)	239	286	73

## PUBLIC OPINION SURVEY EVALUATION

By and large, citizens feel that their general area will improve (34%) or remain the same (34%) during the next five years. An even greater number, 38%, thought their own community would change for the better over the next five years. Residents of Martha's Vineyard/Nantucket and Cape Cod were notably different in that only 25% and 31% respectively thought their area would improve, and 54% and 37% respectively thought their area would remain the same. 35% of the respondents from Buzzards Bay and Mt. Hope Bay felt their general areas would change for the worse in the next five years. Citizens generally feel more optimistic about their own communities compared to their general area. (4-5)

### TOURISM

Tourism is a major activity and industry in coastal areas. When questioned about tourists who stay overnight compared to those who come for the day, 45% thought their community should encourage more overnight guests, 41% said leave at its present level, and 12% said discourage. However, only 29% of the respondents from Martha's Vineyard/Nantucket and 27% from Cape Cod sought to encourage more overnight tourists, while 65% from Buzzards Bay and 63% from Mt. Hope Bay chose to encourage overnight tourists. (6)

When the same question was changed to look at regions rather than single communities, a greater percentage, 50%, sought to encourage tourism, 37% leave it at the current level, and 8% discouraged it. Again, Martha's Vineyard and Cape Cod were notable exceptions with 24% and 27% respectively electing to encourage. 71% from Buzzards Bay and 82% from Mt. Hope Bay thought their neighboring communities should encourage overnight tourism. (7)

We then asked about tourists who come only for the day. 42% feel that their community should encourage day tourists, 38% leave it at the present level, and 17% discourage day tourists. Regional breakdowns proved desparate in this question. Only 15% for Martha's Vineyard/Nantucket and 22% for Cape Cod thought their communities should encourage more day tourists, while 73% from Buzzards Bay, 67% from Mt. Hope Bay, and 66% from the North Shore Shore area feel that their communities should encourage more day tourism. (8)

As proved to be a general pattern for the entire survey, people were more open when viewing their general area. 48% thought their general area should encourage more day tourists, 14% discourage, and 32% leave as is. (9)

Across the board, 64% thought tourism is very important to the economy of Mass., and 32% chose somewhat important. 73% from Cape Cod thought tourism was very important to the economy of Massachusetts. (10)

### OUTER CONTINENTAL SHELF (OCS)

Outer Continental Shelf oil and gas development holds the

potential for bringing significant social, economic, environmental, and political change to communities in Massachusetts' coastal zone. For this reason, the Coastal Zone Management (CZM) public opinion survey asked a series of questions on the general issue of offshore oil development and on several specific land uses associated with OCS development near shore and onshore. (13)

We began the series by asking whether the respondent knew that the process leading to the oil companies drilling for oil and gas about 75 miles off the coast of Massachusetts had begun. Overall 61% said yes and 38% said no. However, residents on Martha's Vineyard/Nantucket (84%) seemed to have a greater awareness of the imminency of OCS development. Surprisingly, only 50% from Buzzards Bay and 54% from Mt. Hope Bay knew the administrative sale process was underway. These two areas are the locations most often thought about as potential areas for OCS development. 44% of the respondents from the lower North Shore knew the OCS lease process was under way.

"If more oil storage areas and tanks had to be built," we asked if they would be acceptable in the respondent's community, general area, somewhere else in the coastal zone in the state, or somewhere else inland in the state. Thirty percent found it acceptable in their community, 67% not. Of notable exception was Buzzards Bay (51% acceptable), Martha's Vineyard (11%), and Cape Cod (14%).

A general pattern developed of acceptability increasing as the distance from the home community increased. 43% found additional oil storage areas acceptable in their general area, and 52% "not". Seventy-two percent in Mt. Hope Bay stated "acceptable" for their general area. Thirteen percent on Martha's Vineyard/Nantucket and 30% on Cape Cod found the facilities acceptable. 65% found the facilities acceptable somewhere else in the coastal zone, 29% "not." The acceptable figures increased slightly again to 70% acceptable, 21% not, when asked as somewhere else inland in the state. Only 61% in Buzzards Bay reached this conclusion.

Thirty-five percent (35%) found industrial areas onshore for building drilling platforms acceptable, and 62% not. Fifty-six percent in Mt. Hope Bay and 55% in Buzzards Bay declared the use acceptable in their community, but was counter balanced by 14% acceptance on Martha's Vineyard/Nantucket and 27% on Cape Cod. 51% found platform construction yards acceptable in their general area, and 44% not. Seventy-nine percent (79%) in Mt. Hope Bay found platform construction yards acceptable elsewhere in the Massachusetts coastal zone. (15)

When asked for their feelings about building an oil refinery somewhere in Massachusetts, 29% were very much in favor, 29% somewhat in favor, 17% neutral, 11% somewhat opposed, and 12% very much opposed. Residents of Buzzards Bay were most in favor of a refinery, 51%. Martha's Vineyard/Nantucket at 12% was most opposed to the idea of building a refinery. 22% on Martha's Vineyard/Nantucket stated very much opposed. (16)

If oil refineries had to be built, 30% on the average would find them acceptable in their community and 68% not. Proving itself consistent on energy related issues, only 4% on Martha's Vineyard/Nantucket and 14% on Cape Cod would find refineries acceptable in their community. The opposite pattern follows for Buzzards Bay

(49%) and Mt. Hope Bay (60%), with these regions showing greater acceptance. Forty-six percent (46%) would find refineries acceptable in their area, 51% not. Sixty-six percent (66%) found refineries acceptable somewhere else in the coastal zone in the state, 29% not. Mt. Hope Bay and the Lower North Shore were 75% and 76% respectively in favor of somewhere else in the coastal zone in the state. 77% were in favor of building a refinery somewhere else inland in the state. (18)

The last questions in the series tested for levels of knowledge and understanding on the issue of having an oil refinery in the state. From a list of six possible consequences we asked the respondents to choose three as having the best consequences. In rank order they were:

93%: The number of jobs would increase for local residents as well as for new people from out-of-state.

88%: The tax dollars for state and local use would increase.

67%: The chances of having oil products on hand would increase.

34%: The demand for housing would start new housing construction in the nearby areas.

31%: Increased commercial harbor activities.

9%: The traditional character of coastal communities would probably change. (19)

The question was then reversed to establish the worst consequences of having an oil refinery on hand. Respondents chose 3 out of 6 possible consequences:

89%: Air and water pollution would increase in the nearby area.

86%: The chances of oil spills would increase.

62%: The traditional character of coastal communities would probably change.

47%: That land can not be used for other things like housing, recreational facilities, open space, or other industrial or commercial use.

26% The demand for housing would increase housing costs on the nearby areas.

19%: Increased commercial harbor activities. (20)

#### COASTAL LAND USE

A series of questions in the survey were aimed at better understanding how citizens would like to see their coastal zone used in the future.

"For the available coastal zone lands in your community," we asked, "which would you emphasize first, housing, recreational



facilities, open space like conservation lands or some type of industrial use?" Citizens chose open space/conservation first (52%), recreational facilities second (50%), housing, third (51%) and industrial/commercial fourth (56%). (22)

Regional responses varied from the norm for this question. For example, while 52% across the coastal zone chose open space first, 70% on Martha's Vineyard and 64% on the South Shore chose this category first; 21% in Mt. Hope Bay, 35% on the lower North Shore and 40% along Buzzards Bay chose open space first.

Recreation was chosen second by 50% of the respondents. Thirty-seven percent on Buzzards Bay, 58% on Martha's Vineyard and 57% on the South Shore chose recreation second.

While 51% chose housing third, 76% on Cape Cod, 32% in Mt. Hope Bay and 41% in the lower North Shore chose housing third.

With a coastal zone average of 56%, 84% on Cape Cod, 71% on the South Shore, 31% on Buzzards Bay and 35% on Mt. Hope Bay chose industrial/commercial fourth.

The same question on setting priorities on the four activities was asked, but shifted from "your community" to "your general area." The order of priorities remained the same. Open space/conservation was chosen first (51.5%), recreational facilities second (51%). Housing third (48%) and industrial/commercial fourth (56%).

Recognizing housing, recreation, open space/conservation and industrial and commercial activities as major coastal uses, the survey proceeded to ask a series of questions on each of these subjects.

## HOUSING

Supposing that a community decided to put new housing in the coastal zone, we asked whether the respondents would favor single family housing or multiple family housing like condominiums or apartments. Seventy-four percent chose single family housing and 18% multiple family housing. Eighty-six percent on Martha's Vineyard and Nantucket, 84% on Cape Cod, 62% on the lower North Shore and 63% on Mt. Hope Bay favored single family housing.

We were interested in seeing if citizens had different desires for neighboring communities, and asked whether they would favor single family housing or multiple family housing for other communities in the area. Sixty-six percent preferred single family housing and 21% multiple family housing. This represents a slight shift over housing types in their own community. Eighty-four percent on Cape Cod, 78% on Martha's Vineyard and Nantucket, 71% on Plymouth Bay, 52% on Buzzards Bay and 51% on the lower North Shore preferred single family housing in neighboring communities. (28)

When asked whether their community should encourage more seasonal housing or not, 22% of the respondents said "encourage more" and 78% said not to encourage more seasonal housing. Thirty-three percent on Buzzards Bay and 12% on the South Shore would encourage more seasonal housing. (26)

Assuming that their community should have more commerce or industry, we asked the respondents to choose three out of six development types they would most favor -- electric power plants, more fishing and fish processing, small shops and restaurants, heavy manufacturing, shopping centers, or tourist accommodations. Small shops and restaurants (78%), fishing and fish processing (74%) and tourist accommodations (74%) were chosen most often. (29)

40% ELECTRIC POWER PLANTS

74% FISHING AND FISH PROCESSING

78% SMALL SHOPS AND RESTAURANTS

34% HEAVY MANUFACTURING

42% SHOPPING CENTERS

74% TOURIST ACCOMMODATIONS

Ninety-eight percent on Martha's Vineyard and Nantucket, 91% on Cape Cod and 82% on Buzzards Bay chose fishing as one of their three choices, while only 46% on the Lower North Shore did. Small shops and restaurants, were chosen by 98% on Cape Cod, 95% on the Islands, and 61% on Buzzards Bay. On the South Shore, only 59% of the respondents chose tourist accommodations, while 94% on Cape Cod and 84% on the Islands chose this category as one of their three choices.

#### RECREATION

Recreation is a major coastal activity, perhaps the most popular coastal use. We asked a series of questions to ascertain the adequacy of existing recreational facilities and preferences for future facilities.

Assuming that their community should provide more opportunities for recreation and relaxation, we asked those interviewed whether they would prefer more parks, more public beaches or more facilities for pleasure boats. Fifty-one percent chose parks, 30% public beaches, and 14% pleasure boat facilities. The responses from Cape Ann-Ipswich Bay varied widely from the state norm. Sixty-two percent of the respondents favored more parks, 13% more public beaches, and fourteen percent (14%) more boating facilities. In a catch all category of "don't know," 26% of the respondents on Cape Ann-Ipswich Bay chose "don't know" versus 5% for the coastal zone as a whole. (31)

Twenty-two percent of the respondents from Plymouth Bay favored more pleasure boat facilities.

To help develop policies on recreation and increasing recreational access to the Massachusetts shore, we asked a series of questions on beach use and preferences.

The first question was whether the respondent or any members of the respondent's family had used a public salt water beach during the past summer season, or not. Seventy-seven percent had, and 22% had not. This norm held true for most of the coastal zone except for Martha's Vineyard and Nantucket (87%) and Buzzard's Bay (62%). (33)

We asked for the name of the beach, and whether the beach was a federal, state, local or MDC facility. Among other things, this piece of data would tell us if people identified beaches correctly by public ownership. For the entire coastal zone, 70% used local beaches, 20% state, 7% MDC and 3% federal. (35)

However, there were stronger regional variations to this question than any other in the survey.

Ninety four percent (94%) of the respondents on Cape Cod and 92% on Plymouth Bay said they used a local beach, compared to a state norm of 71%. In Mt. Hope Bay, 22% went to local beaches.

While 20% of those surveyed said they used a state beach, 78% on Mt. Hope Bay, 37% on Martha's Vineyard and Nantucket, and 33% in Buzzards Bay said they used state beaches. Only 2% on Cape Cod, 6% along the South Shore, 7% in the lower north shore, and 8% in Plymouth Bay went to state owned facilities.

On both Cape Cod and the lower north shore, 4% of those interviewed went to federal beaches. Fifty seven percent (16%) on Cape Ann - Ipswich Bay went to federally owned beaches. In Buzzards Bay, Mt. Hope Bay and Plymouth Bay, not a single respondent used a federal beach last year.

The Metropolitan District Commission (MDC) manages recreational facilities in the greater Boston harbor area. The MDC is a state agency in the Executive Office of Environmental Affairs. Fifty-two percent (52%) in the South Shore and 48% in the lower North Shore used MDC recreational facilities. In the other regions, there were no MDC users according to the survey.

Some people use private beaches when available. We asked whether those interviewed or members of their family or household used a private saltwater beach during the last summer season. In general, 36% of those interviewed used a private beach, 64% did not. (36)

In some regions, a greater or lesser percentage of those surveyed used private beaches. Fifty-nine percent (59%) on Martha's Vineyard and Nantucket, and 49% on the South Shore used private beaches while only 18% on the lower North Shore, 19% on the upper North Shore, and 27% on Mt. Hope Bay used private beaches.

After finding out about general beach use, we asked whether those interviewed thought there was enough public beach space in their area at the present time. Fifty-five percent (55%) thought there was enough beach space, while 45% did not. On Cape Ann - Ipswich Bay, 72% felt they had enough beach space now. (The Trustees of Reservations and the state and federal governments own large parcels of public beach on the upper North Shore -- Plum Island and Crane's Beach). Only 33% in Mt. Hope Bay felt they had adequate public beach space. (37)

Of those who felt more beach space was necessary, 54% said a lot more was necessary, and 42% a little more was necessary. On the South Shore, 71%, and on Plymouth Bay, 68%, thought a lot more was necessary, while only 33% on Buzzards Bay thought this way.

For those people who felt more beach space was necessary, we asked how the beaches should be acquired. Of the three options offered, 12% chose local taxes, 32% state taxes, and 56% through a fee for use. Seventy four percent (74%) on Buzzards Bay and 76% on Cape Ann-Ipswich Bay preferred a fee for use. On Cape Cod, only 35%, and on the Islands only 37% preferred a fee for use.

Twenty-nine percent (29%) on the Islands and 23% on Cape Cod preferred local taxes as the method of acquisition. However, 0% on Mt. Hope Bay, 4% on Buzzards Bay, and 7% on the South Shore felt this way.

Fourteen percent (14%) on Cape Ann-Ipswich Bay, 22% on Buzzards Bay and 42% on Cape Cod preferred acquisition through state taxes, versus the state norm of 32%.

Often, non-coastal residents complain about inadequate beach access in the Commonwealth. We asked the respondents how they felt about letting non-residents use town beaches if they pay a fee.

Very much in favor	34%
Slightly in favor	25%
Neutral	14%
Slightly opposed	11%
Very much opposed	13%

Fifty two percent (52%) on Cape Cod, 49% on Buzzards Bay and 42% on Cape Ann-Ipswich Bay were very much in favor of letting non-residents use town beaches if they pay a fee. Only 18% were so inclined on Martha's Vineyard and Nantucket. (40)

In Mt. Hope Bay, 43% were somewhat in favor of allowing non-residents use beaches with fees. Five percent (5%) on Cape Ann-Ipswich Bay were somewhat opposed. On Martha's Vineyard and Nantucket, 29% were very opposed. There was no opposition in Mt. Hope Bay.

We reversed the question somewhat, and asked those polled how they felt about letting non-residents use town beaches without a fee.

Very much in favor	16%
Slightly in favor	8%
Neutral	9%
Slightly opposed	21%
Very much opposed	45%

On Martha's Vineyard and Nantucket, 38% were very much in favor of allowing non-resident use without a fee. This was true for 25% of those polled on the Lower North Shore, but only 6% on Cape Cod, 5% on Mt. Hope Bay, and 8% on Plymouth Bay.

Two percent (2%) on Cape Cod, 3% on Cape Ann-Ipswich Bay, and 15% on the Islands were somewhat in favor.

Some areas were very much opposed to allowing non-resident use of beaches without a fee. Sixty-six percent (66%) of the respondents on Cape Cod and 57% on Plymouth Bay felt this way. Twenty-four percent (24%) on Martha's Vineyard and Nantucket and 31% on the lower North Shore had these feelings.

Some local officials oppose non-resident use of town beach facilities because of the traffic and parking problems associated with increased use.

We asked those surveyed how serious they thought parking problems were at public beaches. Forty-two percent (42%) said very serious, 32% somewhat serious and 20% not at all serious. (42)

On the Lower North Shore, 53% felt parking to be a serious problem, where as on Buzzards Bay, 31%, and on Mt. Hope Bay, 30% felt this way.

Twenty eight percent (28%) on Cape Ann-Ipswich Bay and 33% on Buzzards Bay felt that parking was not at all a serious problem.

The proportional responses to the question on the level of seriousness of traffic congestion on the roads around beaches paralleled the parking problem question. (43)

Forty-four percent (44%) found traffic congestion to be a very serious problem, 36% some what serious, and 16% not at all serious.

However, 61% of those surveyed on Cape Ann-Ipswich Bay found traffic to be a very serious problem. Only 26% on Buzzards Bay considered traffic congestion a very serious problem; another 26% from the region consider traffic to be not at all serious.

Some legislators and citizens have suggested that all the land exposed between high and low tide should be open for public use, rather than limited to private use as most of it is now in Massachusetts. This concept is known as lateral rights of access. Massachusetts' access rules are considered the most restrictive in the country. We asked survey respondents whether they favor or not opening this land to public use.

Very much in favor	34%
Slightly in favor	15%
Neutral	16%
Slightly opposed	11%
Very much opposed	22%

Forty three percent (43%) of those interviewed on Martha's Vineyard and 42% on the Lower North Shore were very much in favor of lateral rights of access. Only 22% on the South Shore had this interest. On Cape Cod, 31% were very much opposed, as were 29% on Buzzards Bay.

Two-thirds or 65% of those surveyed had thought about this issue before. Eighty-six percent in Martha's Vineyard and Nantucket and 76% on Cape Cod had thought about the issue before, while only 42% had in Mt. Hope Bay. (45)

Boating is a major recreational activity for citizens throughout the state and region. To help develop CZM recreation policies, we asked several questions on boating.

First, we asked whether any members of the respondent's family or household had gone recreational boating in the tidal waters

of Massachusetts more than once during the past season, or not. Forty-four percent (44%) had, and 56% had not.

Fifty-eight percent (58%) on Martha's Vineyard and Nantucket, 52% on Cape Cod and the South Shore, and 51% on Plymouth Bay had gone boating. Only 26% of those interviewed on Buzzards Bay and Mt. Hope Bay, and 25% on the Lower North Shore had gone recreational boating last year.

We then asked the entire sample whether there were enough recreational boating facilities in their coastal zone region at the present time, or whether more facilities were needed. Forty-nine percent (49%) felt that their area had enough facilities now, 28% felt a need for more facilities, and 23% answered with a "don't know." (47)

Only 39% on the Lower North Shore, 59% on Cape Cod and 58% on Martha's Vineyard and Nantucket felt they had enough recreational boating facilities.

Of those who felt that more recreational facilities were needed, 28% felt that many more were needed, and 66% just a few more were needed. (48)

On Cape Cod, 38% felt a need for many more facilities, as did 36% on Buzzards Bay. Only 17% on Mt. Hope Bay felt that many more facilities were needed, with 83% saying a few more were needed.

#### COASTAL CHARACTER

Evaluating aesthetic issues in coastal zone management is difficult. Different people have different opinions and values.

We asked each of those surveyed how important the traditional seafaring character of Massachusetts coastal towns is to tourists. (50)

Very important	68%
Somewhat important	25%
Not at all important	5%

Only the Lower North Shore was a major exception to this question with 56% choosing "very important", and 38% choosing "somewhat important."

We reversed the emphasis of the question slightly, and then asked how important traditional seafaring character was to their enjoyment of Massachusetts. (51)

Very important	57%
Somewhat important	28%
Not at all important	14%

On Martha's Vineyard, Nantucket and Cape Cod 67% considered seafaring character very important. Forty percent (40%) of those surveyed on the Lower North Shore, and 46% on Mt. Hope Bay felt this way.

## COMMERCIAL FISHING

Many people have strong emotional feeling about the commercial fishing industry in the Commonwealth. We wanted to know how important citizens thought the commercial fishing industry is to the economy of Massachusetts. (52)

Very important	72%
Somewhat important	22%
Not at all important	3%

Eighty-three percent (83%) on Buzzards Bay and 60% on Mt. Hope Bay considered commercial fishing very important to the economy of Massachusetts.

## COASTAL EROSION

Some communities suffer from serious coastal erosion problems, while others do not. We asked, "how serious is coastal erosion in your community?" (53)

A serious problem	34%
A somewhat serious problem	23%
Not too serious	28%

Martha's Vineyard and Nantucket (65%) and Cape Cod (44%) felt they had serious erosion problems. However, only 13% on the Lower North Shore, 16% on Mt. Hope Bay, perceived their communities as having serious erosion problems.

Concurrently, 41% on the Lower North Shore, 36% on Mt. Hope Bay, 35% on Buzzard's Bay, 23% on Cape Cod and 14% on the Islands claimed to have "a not too serious problem."

Seventy percent (70%) of those surveyed had thought about coastal erosion before, 30% had not. On Martha's Vineyard and Nantucket, 90% had thought about erosion problems, as had 83% on Cape Cod and 82% on Cape Ann-Ipswich Bay. On the other extreme, 34% on the Lower North Shore, 42% on Mt. Hope Bay, and 56% on Buzzards Bay had thought about erosion problems. (54)

When asked about the seriousness of the threat of occasional coastal flooding in their community, 11% feel a very serious threat, 22% somewhat serious, and 62% not very serious. Sixty-eight percent (68%) of the respondents had thought about the problem of coastal flooding before. (55)

The U.S. Housing and Urban Development agency administers a federal flood plain insurance program. Communities are now deciding whether to accept the program or not. We sought the opinions of coastal citizens on the general question of building in flood prone areas, and divided the question into two parts: a) flood prone areas should not be developed, b) individuals should be able to build in the flood prone areas and accept the risk of major flooding. On the average, 48% come out for no development and 48% for the individual risk option. Sixty-one percent (61%) on Cape Cod and the South Shore called for no development, while 28% in Buzzards Bay and 32% in Mt. Hope Bay called for no development in flood prone areas. (57)

Visual Access, or the ability to see the water and its activities, is a critical resource issue. Some people like to be able to see the coast and coastal activities, and some people do not care one way or the other. We asked, "How important is it to you to be able to see the water and its activities?" Overall, 60% stated very important, 23% somewhat important and 17% not very important. Of notable exception, 49% of the respondents in Buzzards Bay and 43% on the Lower North Shore feel visual access to be very important. (58)

When asked whether their community had sufficient visual access, 69% stated "yes" and 27% stated "no". Eighty-one percent (81%) of the respondents from Martha's Vineyard and Nantucket and 75% from Cape Cod feel they have enough, while only 51% from Mt. Hope Bay feel they have enough.

By asking the question, "How likely is it that you would move if your coastal zone area had large scale oil and gas development in the next five years and the expected amount of environmental pollution?" we hoped to gain a better feeling for how people and regions might respond under this OCS scenario. Overall, 19% felt it was very likely that they would move, 15% somewhat likely, 19% undecided, 15% somewhat unlikely, and 32% very unlikely. (61)

Eleven percent (11%) on Mt. Hope Bay, 12% on Buzzards Bay, 24% on the Islands, and 25% on Cape Ann-Ipswich Bay felt it was very likely that they would move compared to 19% overall.

#### MANAGEMENT

How to move from planning to implementation, or management, is one of the most important questions facing citizens, local officials, CZM planners, and others. We recognized in preparing the survey that different people and interest groups have different opinions about what level of government, if any, should try to control land and



water use in the coastal zone. We asked, "In your opinion, which level of government would do the best job of controlling land use in the Massachusetts coastal zone - federal, state, regional, local, some combination, or no control by any level of government?" Overwhelmingly, 40% of the respondents desired some combination most of all--24% desired local control only, 12% opted for state control, and the other options drew less than 10% each. (63)

There was slight variation among regions. Thirty-one percent (31%) on the Lower North Shore chose local control and 28% chose some combination. On Cape Cod, 48% chose some combination and 15% opted for local control.

Of those who chose "some combination," 20% chose state-local only, 63% chose an alternative with a state-local participation as its base. (64)

Coastal Zone Management programs are primarily interested in "developments of regional impact," or development that might affect neighboring communities as well as the community in which they are located. For six major development types we asked which level of government--local communities, groups of neighboring communities, or some designated state agency--should have the major responsibility in deciding how land and water resources should be used. For large scale housing developments, 68% chose local communities, 23% neighboring communities, and 7% a state agency. For shopping centers and similar large commercial developments 62% chose local, 32% neighboring communities, and 3% state. Marinas had the most local support, 72%, with 17% for neighboring communities, and 8% for some state agency. (65)

As the developments grew in scale, the respondents began to place greater responsibility on neighboring communities and the state. Industrial parks or developments had a 57% - local, 31% neighboring community, and 10% - state-split. For electric power plants, 37% chose local communities, 38% neighboring communities, and 21% for state agency responsibility. For the last development type, oil refineries, the respondents gave local 37%, groups of communities 37%, and the state 22%.

For large scale housing developments, 86% on Cape Ann and Ipswich Bay preferred local control, compared to the state average of 68%. Twenty-nine percent (29%) on Martha's Vineyard and Nantucket preferred neighboring communities compared to the state norm of 23%.

For shopping centers and other large scale commercial developments, 72% on the Lower North Shore and on Cape Ann and Ipswich Bay chose local control compared to the norm of 57%. Thirty-nine percent (39%) on the South Shore preferred a regional grouping of neighboring communities compared to the state average of 31%.

For constructing marinas, 86% on Cape Ann-Ipswich Bay compared to 49% in Mt. Hope Bay, and a norm of 72% chose a local option. Thirty-one percent (31%) on Mt. Hope Bay preferred cooperation among neighboring communities.

With an average of 37% choosing local control over power plant development, local control was chosen by 47% on Martha's Vineyard and Nantucket, by 19% on the South Shore, by 46% on the Lower North Shore

and by 43% on Cape Ann-Ipswich Bay. Fifty-four percent (54%) on Cape Cod, 28% on Buzzards Bay, and 25% on the Lower North Shore chose neighboring communities as the decision making level on power plant siting. Thirty-two percent (32%) in Buzzards Bay and 36% in the South Shore opted for state control. (average 21%)

On the average, 37% of the respondents preferred local control over refinery siting. However, 52% of the respondents on Martha's Vineyard and Nantucket, 26% from Cape Cod, and 23% from Mt. Hope Bay preferred local control. Forty-one percent (41%) from Mt. Hope Bay preferred state control on the siting of refineries.

For the same six development types, we then asked the respondents whether a group of neighboring communities should have the power to stop a local decision to build or not. (66)

For shipping/commercial developments, 44% of those interviewed said, "yes" while 53% said "no" to neighboring communities having an override. Thirty-three percent (33%) from Cape Ann-Ipswich Bay said "yes" to neighboring community override, and 49% from Cape Cod and the South Shore said "yes".

For industrial development, 45% of the respondents would favor neighboring community veto while 53% would not. Fifty-seven percent (57%) from the South Shore would favor a veto, while 62% from the North Shore and 60% from the Lower North Shore would not.

Reflecting the local nature of marinas, only 35% of the respondents would favor neighboring community veto authority over marinas; 62% were opposed.

Fifty-seven percent (57%) of those interviewed preferred nearby community authority to stop electric power plants; 39% were opposed. Sixty-four percent (64%) of the respondents from Cape Cod and 63% from Mt. Hope Bay approved of the community override.

On the other energy related issue, refineries, 62% would approve of the veto, while 34% would not. Seventy-two percent (72%) of those polled in Mt. Hope Bay and 71% of South Shore respondents would favor a neighboring community veto.

Finally, for the same six development types, the citizens interviewed were asked whether some state board or agency should have the power to stop a local decision to build, or not. (67)

Twenty-three percent (23%) felt a state agency should have the power to stop shipping/commercial development; 72% said the state should not. Thirty-nine percent (39%) of the respondents from Mt. Hope Bay felt that the state should have override authority.

Twenty-six percent (26%) of those interviewed believed that the state should have the power to stop industrial parks or developments; 70% did not. Forty percent (40%) of the respondents from Mt. Hope Bay sanctioned state veto over industrial facilities.

For marinas, 24% favored a state veto while 72% did not. Mt. Hope Bay was again the exception, with 46% sanctioning a state agency veto. Thirty-two percent (32%) of those interviewed on Cape Cod thought the

state should have authority to stop a project.

Across the coastal zone, 43% of those questioned thought the state should have the power to control power plant development. Twenty-eight percent (28%) of those poled on Buzzards Bay and 65% of those poled on Mt. Hope Bay felt this way.

Forty-five percent (45%) of the respondents felt the state should have control over refineries. The wide exceptions to the norm to this question were Buzzards Bay (31%) and Mt. Hope Bay (65%) in favor of a state veto.

#### MISCELLANEOUS

Some states have coastal impact funds that are used to pay for the clean up of any kind of oil spill that might occur. Maine has such a fund. The Massachusetts legislative has debated the merits of such a fund for the Commonwealth. We asked the survey respondents whether it was necessary to have such a fund set up in Massachusetts at the present time. Sixty-four percent (64%) said very necessary, 26% somewhat necessary, and 8% not very necessary. Seventy-eight percent (78%) on Cape Cod, 72% on Martha's Vineyard and Nantucket, 70% on Cape Ann-Ipswich Bay, and 53% on Buzzards Bay felt the fund was necessary now. (69)

To ascertain the public's perception of local interest groups, we asked, "If your community planning and zoning board were evaluating a proposed development, which of four interest groups do you think would in fact have the most influence?" Thirty-eight percent (38%) of the respondents thought housing construction interests would have the most influence; 30% thought conservation interests would. Thirty-two percent (32%) thought housing construction interests would have the second most influence; 26% thought outdoor recreation interests would have the second most influence. Forty percent (40%) of the respondents thought outdoor recreation interests would have the third most influence. The fourth interest, industrial interests were thought to have the least influence. Thirty-six percent (36%) of the respondents thought industrial interests were the fourth most influential. (70)

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Housing construction interest	38 %*	32 %*	20 %	9 %
Outdoor recreation interest	5	26	40*	29*
Industrial interest	29	20	14	36
Conservation interest	30	23	24	23

The influence question was then shifted to ask, "Who should or ought to have the most influence." Fifty-three percent (53%) felt conservation interests should have the most influence; 44% felt outdoor recreation interests should have the second most influence; 38% felt housing construction interest should have the third most influence; 49% felt industrial interests should have the least influence. (71)

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Housing construction interest	19 %	27 %	38 %*	16 %
Outdoor recreation interest	8	44*	29	19
Industrial interest	22	14	15	49*
Conservation interest	53*	16	17	14

For the last question in the survey, we posed a hypothetical situation to better understand the funding priorities of coastal

residents. "Suppose your community received some money from the federal government to spend any way it wanted to improve its coastal area. Of four activities where would you put the money first? second? third? fourth? Forty-five percent (45%) chose improve water quality in the coastal zone first; expand public beaches and recreational facilities in the coastal zone was chosen second(39%); attract housing development was chosen third (44%); and attract industrial or commercial activities in the coastal zone was chosen fourth(40%). (72)

THE GREATER BOSTON HARBOR AREA  
CZM SURVEY RESULTS

(Editor's Note: Because citizens in the greater Boston Harbor area were polled through a mail survey rather than through face-to-face interviews, the survey responses appear segregated from the main body of survey analysis. The mail survey contained fewer questions than the interview format survey.

Three hundred and sixty (360) households completed and returned the survey questionnaire. The households were chosen through a scientific random process. This number of responses gives the survey its maximum level of statistical validity.

To allow you to compare responses with the main survey for similar questions, two question numbers are given. The first number represents the mail survey number; the second number represents the corresponding question in the interview format survey.

Survey responses were coded for both "your general area" (see map for region 7 (Quincy area) and region 8 (Boston area), and "your community" refers to the name of the respondents city or town, and if appropriate, neighborhood. This is important for some questions.

General Perceptions

In response to the question, "will your area in general change for the better, for the worse, or stay the same during the next five years,?" 26% said better, 32% worse, and 31% remain the same. In the Quincy area, 39% felt their area would remain the same. (4-4)

When asked the same question in terms of "their community," 27% thought their community would improve, 33% said get worse and 28% said remain the same. The Quincy area varied slightly with 35% saying their area would remain the same. (5-5)

We compared the responses to this question with a demographic question on people's income. Twenty-five percent (25%) of those making less than \$10,000/year thought their community would improve, 41% said get worse. Thirty-one percent (31%) of those making \$10,000-\$20,000/year thought their community would improve, and 29% of those making more than \$20,000 annually felt this way. Of those making \$10,000-20,000/year, 30% felt their community would worsen, while 35% of those making over \$20,000/year had this perception.

Offshore Oil and Gas Development.

We began the series of questions on outercontinental shelf (OCS) oil and gas development by asking if the respondents knew that the process leading to oil company drilling for oil and gas about 75 miles off the coast of Massachusetts had begun? On the average 40% had, and 53% had not. Sixty percent (60%) in the Quincy area and 39% in the greater Boston area knew the lease process had begun. (6-13)

A photograph in the survey showed one type of oil refinery and tank farm. Respondents were asked, "if more oil storage and tanks had to be built, tell us whether or not, in your opinion, each of four

locations would be an acceptable place to put them?" (7/14)

Quincy Area

	<u>Acceptable</u>	<u>Not Acceptable</u>
Oil storage areas in your community	25%	66%
In your general area	31%	58%
Somewhere else in the coastal zone in the state	46%	28%
Somewhere else inland in the state	51%	22%

Boston Area

Oil storage areas in your community	13%	67%
In your general area	29%	56%
Somewhere else in the coastal zone in the state	48%	26%
Somewhere else inland in the state	39%	27%

In general, as the facility was moved farther from the respondent's community, the level of acceptability increased.

The survey form contained a photograph of an offshore drilling platform. We asked, "If an industrial area for building the drilling platform had to be found, tell us whether or not it would be acceptable to put them in your community, your general area, or elsewhere in the coastal zone in the state?" (8/15)

Quincy Area

	<u>Acceptable</u>	<u>Not Acceptable</u>
In your community	31%	60%
In your general area	46%	46%
Somewhere else in the coastal zone in the state	56%	21%

Boston Area

In your community	16%	67%
In your general area	34%	47%
Somewhere else in the coastal zone in the state	51%	17%

We asked respondents how they felt about building an oil refinery somewhere in Massachusetts. They responded to one of five options: (9/16)

	<u>Quincy Area</u>	<u>Boston Area</u>
Very much in favor	32%	33%
Somewhat in favor	26%	23%
Neutral	17%	14%
Somewhat opposed	11%	10%
Very much opposed	10%	15%

We wanted to know how much people had thought about the issue of building an oil refinery and asked them, "Had they thought about building an oil refinery?" (10/17)

	<u>Quincy Area</u>	<u>Boston Area</u>
Very much	20%	16%
A moderate amount	39%	37%
A little	21%	22%
Hardly at all	20%	22%

It appeared as if people in the metropolitan areas had spent less time thinking about this issue than in more rural parts of the coastal zone.

If oil refineries had to be built, we asked repondents to tell us if it would be acceptable or not to put one in each of these locations: (11/18)

#### Quincy Area

	<u>Acceptable</u>	<u>Unacceptable</u>
In your community	21%	66%
In your area	36%	51%
Somewhere else in the coastal zone in the state	55%	26%
Somewhere else inland in the state	54%	18%

#### Boston Area

	<u>Acceptable</u>	<u>Unacceptable</u>
In your community	13%	68%
In your area	30%	50%
Somewhere else in the coastal zone in the state	50%	22%
Somewhere else inland int the state	49%	17%

In compiling the survey data on a computer, we compared the results of this question to an earlier question which asked how respondents felt about building an oil refinery somewhere in Massachusetts. Of those who were very much in favor of building a refinery somewhere in the state, 79% found siting the facility in their community acceptable. Of those who were neutral on the issue, 7% would find a refinery in their community acceptable. For respondents very much opposed to a refinery in the state, only 2% would find a refinery acceptable in their community.

The cross tabulation was then done for the siting of a refinery in their general area. Of those who were very much in favor of a refinery, 62% would find a refinery acceptable in their area. Of those who were neutral on the issue, 5% would find a refinery acceptable. Of those very much opposed to a refinery, 4% would find their area as acceptable.

For respondents very much in favor of a refinery, 45% would find a location somewhere else in the coastal zone acceptable. Four percent (4%) of those very much opposed would find a coastal site elsewhere acceptable.

Finally, the cross tabulation was done for inland locations. Of those very much in favor of a refinery, 41% would find an inland site acceptable. Of the respondents who felt neutral on the subject, 10% would find an inland location acceptable. Of those urban area coastal residents very much opposed to a refinery, 9% would find an inland location acceptable.

We sought to learn more about the respondents' feelings about commerce and industry along their community's waterfront. Of six choices, we asked survey respondents to choose three they would most favor. (12/29)

In both regions, citizens expressed a preference for small shops and restaurants, commercial fishing piers and fish processing, and tourist accommodations most often.

	Quincy <u>Area</u>	Boston <u>Area</u>
Electric power plants	40%	36%
Commercial fishing piers and fish processing	53%*	59%*
Small shops and restaurants	62%*	58%*
Heavy manufacturing	24%	24%
Shopping centers	28%	35%
Tourist accommodations	47%*	45%*

When asked whether their three judgements were difficult choices, easy choices or just guesses, sixty-six percent (66%) in Quincy and 64% in Boston found their choices easy; 25% in Quincy and 21% in Boston found their choices difficult. Only 6% in the Quincy area and 13% in Boston felt their responses were just guesses. (13/30)

#### HOUSING

"Supposing that new housing was to be built along your community's waterfront," we asked those surveyed to choose one of four options



they would most favor. In Quincy the largest percentage (38%) chose no new housing as their option. Boston area residents chose low rise apartments or condominiums (39%) most often. (14)

	<u>Quincy</u>	<u>Boston</u>
High rise Apartments	4%	8%
Single family homes	30%	22%
Low rise apartments or condominiums	24%	39%*
No new housing	38%*	19%

## RECREATION

We asked a series of questions on recreation use and desires. We began with the question, "Have you or any members of your family or household used a public salt water beach during this past summer season?" In the Quincy area, 82%, and in the Boston area, 70% had used a public salt water beach. (15/33)

We asked those who used a public beach to give the name of the public salt water beach used most often. We then asked whether the beach is a federal beach, state beach, local beach or Metropolitan District Commission (MDC) beach. Forty-one percent (41%) in Quincy and 39% in Boston used MDC facilities most often. (17/35)

	<u>Quincy</u>	<u>Boston</u>
Federal	2%	1%
State	2%	3%
Local	25%	11%
MDC	41%*	39%*

All those surveyed were asked whether they or any members of their family or household had used a private salt water beach at all during the past summer season, or not? In the Quincy region 38% had, and in the Boston region 24% had. (18/36)

When asked whether there was enough public beach space in their coastal zone area at the present time 49% in Quincy thought they had enough, while 46% thought they needed more. For Boston, 47% felt there was enough while 44% felt a need for more. (19/37)

The responses to these last two questions were crosstabulated. Of those who used a private beach last season, 33% felt a need for more public beach space. Twenty-nine percent (29%) of those who used a private salt water beach felt existing public beach facilities to be adequate.

A series of questions probed at the issue of urban resident's use of recreation facilities in non-urban areas. "What do you think about making the beaches in coastal towns outside of urban areas open to urban residents if the urban residents pay a fee for using them?" In general, those responding to the survey (27% for both regions) were very much in favor. (20)

	<u>Quincy Area</u>	<u>Boston Area</u>
Very much in favor	27%*	27%*
Slightly in favor	13%	16%

	Quincy <u>Area</u>	Boston <u>Area</u>
Neutral	20%	18%
Slightly opposed	16%	10%
Very much opposed	19%	18%

The same question was asked but with a shift from a fee to no fee. "What do you think about letting urban residents use the beaches in the towns outside of urban areas without paying a fee?" In general Boston residents were very much in favor (34%) and Quincy area respondents very much opposed (33%). (21)

	Quincy <u>Area</u>	Boston <u>Area</u>
Very much in favor	20%	34%*
Slightly in favor	13%	11%
Neutral	21%	18%
Slightly opposed	12%	12%
Very much opposed	33%*	17%

When asked, "In your opinion, how serious a problem is it for urban area residents to use the beaches outside of urban areas?," a plurality in the Quincy area thought somewhat serious (39%) while Boston area residents were divided between not knowing and somewhat serious. (22)

	Quincy <u>Area</u>	Boston <u>Area</u>
Very serious	12%	15%
Somewhat serious	39%*	32%
Not at all serious	30%	26%*
Don't know	18%	26%*

The responses to this question were cross tabulated with demographic information on income. Of those who consider the problem very serious, 18% make less than \$10,000/year, 17% make \$10,000-20,000/year; and 6% make over \$20,000/year.

Of those who thought the problem was somewhat serious, 31% make less than \$10,000/year, 34% have incomes in the \$10,000-20,000 bracket, and 43% have income in excess of \$20,000/year.

Of those who consider the problem "not very serious," 18% have an income of less than \$10,000/year, 28% make between \$10,000 and 20,000 annually, and 37% make in excess of \$20,000 each year.

Some people have suggested that all the land exposed between high and low tide should be open for public use, rather than limited to private use as much of it is now in Massachusetts. We asked those people how they felt about lateral rights of access. In general citizens are very much in favor (33% Quincy, 38% Boston). (23)

	Quincy <u>Region</u>	Boston <u>Region</u>
Very much in favor	33%*	38%*
Slightly in favor	14%	13%
Neutral	17%	17%
Slightly opposed	9%	7%
Very much opposed	20%	12%

Sixty-eight percent (68%) of the respondents from the Quincy area had thought about the issue before, while 57% from the Boston area had. (24)

We wanted to learn more about the boating habits and needs of urban residents, and asked, "Did you or any members of your family or household go recreational boating in the tidal waters of Massachusetts more than once during the past season or not? Thirty-five percent (35%) from the Quincy area and 24% from the Boston area had. Sixty-five percent (65%) and 74% respectively had not. (25/46)

"Are there enough recreational boating facilities in your coastal zone area at the present time, or do you need more?" was the follow-up question. In Quincy, 39%, and in Boston, 29%, thought they had enough recreational boating facilities. (26)

	<u>Quincy Area</u>	<u>Boston Area</u>
Enough	39%*	29%*
Not enough	31%	21%
Don't know	28%	47%

The responses to questions 25 and 26 were compared. Of those who went boating in the tidal waters of Massachusetts, 33% felt there were enough facilities, 56% felt more facilities were needed and 8% responded with a "don't know".

Of those who did not go boating in the tidal waters of the Commonwealth last season, 67% thought there were enough facilities and 43% thought more facilities were needed.

#### General Coastal Perceptions

We asked those polled how important traditional seafaring character is to their enjoyment of Massachusetts. (28)

	<u>Quincy Area</u>	<u>Boston Area</u>
Very important	38%*	39%*
Somewhat important	38%	28%
Not at all important	15%	18%
Don't know	5%	12%

Economically and aesthetically commercial fishing is thought to be important to many people. We asked those surveyed "How important do you think the commercial fishing industry is to the economy of Massachusetts? Sixty-nine percent (69%) in the Quincy area and 73% in the Boston area consider it very important. (29)

	<u>Quincy Area</u>	<u>Boston Area</u>
Very important	69%*	73%*
Somewhat important	28%	20%
Not very important	2%	2%

Visual access is a difficult planning idea to implement. Different people have different values and ideas. Some people like to be able to see the water and its activities, some people don't care one way or the other." We asked, "How important is it to you to be able to see the water and its activities?" Fifty-six percent (56%) in Quincy and 51% in Boston consider it very important. (30)

	<u>Quincy</u> <u>Area</u>	<u>Boston</u> <u>Area</u>
Very important	56%*	51%*
Somewhat important	31%	31%
Not too important	13%	13%

When asked if, in their opinion, their community has enough casual views of water and harbor activities, or not, 53% in Quincy and 36% in Boston thought they had enough. (31)

	<u>Quincy</u> <u>Area</u>	<u>Boston</u> <u>Area</u>
Enough	53%*	36%*
Not enough	37%	48%
Don't know	9%	13%

"Some states have coastal impact funds which are used to clean up any kind of oil spill that might occur. These coastal impact funds come from the oil companies, not from state taxes."

We asked, "In your opinion, how necessary is it to have a coastal impact fund set up in Massachusetts at the present time? The majority of those surveyed felt very necessary: Quincy (75%) Boston (68%).

	<u>Quincy</u>	<u>Boston</u>
Very necessary	75%*	68%*
Somewhat necessary	18%	17%
Not at all necessary	2% ~	3%

As a measure of community priorities, we posed a hypothetical question: "Suppose your community received some money from the federal government to spend any way it wanted to improve its coastal area. Of four, activities, where would you put money first? second? third? fourth?" In general, improve water quality was chosen first (68%, 63%), improve beaches and recreational facilities, second (38%, 34%), attract housing, third (30%, 27%), and attract industrial commercial activities, fourth (34%, 30%). (33)

- A. Expand public beaches and recreational facilities in the coastal area.
- B. Improve water quality in the coastal area.
- C. Attract industrial or commercial activities in the coastal area.
- D. Attract housing, development in the coastal area.

	1		2		3		4	
	Q	B	Q	B	Q	B	Q	B
A. Recreation	23%	13%	38%	34%*	16%	15%	47%	9%
B. Water Quality	68%	63%*	16%	11%	3%	7%	2%	3%
C. Industry	6%	12%	12%	11%	22%	15%	34%	30%*
D. Housing	2%	8%	9%	11%	30%	27%*	31%	22%

The opinion survey stated, "Some people see a need for a new government agency to coordinate the activities of the many different levels of government with jurisdiction in the greater Boston Harbor area. Under their proposal, planning and permitting for reconstruction and new construction in the harbor would be coordinated by a single new agency made up of representatives of state and local governments and of regional agencies. What do you think of the idea?" (34)

The majority of survey respondents were very much in favor (Quincy 40%, Boston 30%) of the idea.

	<u>Quincy</u>	<u>Boston</u>
Very much in favor	40%*	30%*
Slightly in favor	16%	19%
Neutral	13%	18%
Slightly opposed	4%	9%
Very much opposed	14%	11%



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## Appendix C: Federal Participation

## FEDERAL PARTICIPATION APPENDIX

Under the requirements of the Coastal Zone Management Act, special provision is made for federal participation in the development of a state's Coastal Zone Management Program. The nature of that involvement has been interpreted in a variety of ways by other coastal states whose approaches have helped guide Massachusetts in best directing its own federal participation efforts. From the beginnings of its Coastal Zone Management Program in the summer of 1975, Massachusetts has been cognizant of the integral role which federal agencies have played and will continue to have in shaping the future uses and development of the Massachusetts coast.

The first steps were toward educating federal agencies about the MCZM Program -- its origins and direction -- and to gain a clear understanding of the respective roles and authorities the federal government held in relation to our coastal zone. The New England River Basins Commission was instrumental in establishing lists of federal agency regional offices whose technical and policy level work would weigh significantly in the formation of the Program's planning and management approach. These lists formed the core for what has become a group of some thirty-five participatory agencies and was the basis for distribution of a CZM introductory letter in June of 1975. This correspondence formally introduced the Program, outlined its purposes and requested pertinent information on federal programs; thereby marking the beginning of federal involvement in the Massachusetts Program. Of these thirty-five agencies, several had missions which bore directly on the coastal zone. CZM staff met with the Environmental Protection Agency, the U.S. Geological Survey, the Department of Housing and Urban Development's Flood Insurance Branch, and the Army Corps of Engineers during that summer to expand its knowledge of the agencies' coastal interests and to define the relationship of those federal programs and activities to the state's coastal zone planning.

During its first months, as the staff began to compile and analyze data and formulate positions on coastal uses, CZM again sought federal involvement through submission of its reports and newsletters for information and response. Under a cover letter in April, 1976 (see Attachment 1), copies were distributed of the CZM newsletter "Coastlines" -- which reported on the Program's planning developments and current activities -- together with a coastal zone planning guidebook, "Living by the Sea". The letter requested confirmation of each agency's CZM designee and invited comment on and participation in the Program. The majority of responses, however, indicated that substantive federal involvement would begin with formal reaction to a CZM Plan draft; that in the absence of such a document, little meaningful interchange could occur.

In the interim between that time and the draft submission, there still existed a number of steps which were necessary to ensure adequate consideration of federal interests. Two interns, over the summer of 1976, were assigned the task of interviewing each federal agency's representative and collecting pertinent background information, including copies of relevant federal regulations, statements of agency missions and administrative responsibilities, and such guidance as had been provided nationally to the agency regarding the interrelationships between that agency and developing CZM programs. (Refer to Federal Consultation Chart.) This task continued May through September resulting

in the compilation of meeting notes and information into two federal information volumes. This resource was heavily relied upon when setting priorities for future uses of the coastal zone, formulating policies to guide or condition major activities having direct and significant impact on coastal waters, and in developing mechanisms by which such priorities and policies could be assured of implementation. Further steps were taken when Plan authors, in the course of their work, supplemented and refined their understanding of federal programs by directly contacting federal agencies where federal agency missions were shown to be directly pertinent to setting priorities and instrumental to policy implementation. This kind of contact has helped CZM staff in expanding its grasp of federal/state interactions. Similarly, it has allowed federal agencies to follow the development of the Program and provided them with opportunities to participate directly in developing coastal policies.

In November, 1976, the Program Preview was formally distributed to each of the thirty-five federal agencies for review and comment. (See attachment 2.) The document represented the sum of CZM's completed efforts and was the focus of the Program's first comprehensive review by federal, as well as state and local, officials. A formal day-long presentation -- with commentary by members of the Coastal Zone Task Force, Governor Dukakis, Secretary of Environmental Affairs Evelyn F. Murphy, and NOAA -- was given on December 16, 1976 with invitations to attend sent to all of our federal contacts. The presentation offered an overview of the Program's policies and provided a forum for publicly airing comments and concerns.

Over the course of the next two months, letters of comment came from the majority of federal agencies. Each was included in a compendium of comments and distributed amongst CZM staff for consideration when revising the Preview into a formal Program Submission; all received CZM written response. Those federal agencies who had not responded by January were contacted by telephone as a reminder of the importance of such comment to ensure consideration in amending the document. In cases where we had no response after a reasonable period of time, letters were sent encouraging prompt review.

The serious nature of some responses warranted special consideration. In order to reconcile these conflicts and isolate the areas of concern, CZM arranged meetings with several federal agencies. These meetings were held during January with the Corps of Engineers, the Department of Transportation, the Department of Housing and Urban Development's Planning and Community Development section and the Flood Insurance Program, the Department of Interior and its six agencies, the Environmental Protection Agency and the Federal Energy Administration. The sessions were useful in clearing up misunderstandings, airing serious concerns and mutually resolving problem issues. At the conclusion of these meetings CZM corresponded in writing with the CZM federal contact and each of the participants to reiterate the points discussed and results achieved. The meetings' accomplishments have been reflected in both specific changes and additions made when converting the Program Preview into a Program Submission. (See Attachment 3).

#### Other Participation Opportunities

During the life of the Program, many of its activities have brought federal involvement on particular coastally-related issues, and CZM's evolving policies have been the basis for staff A-95 and NEPA review comments. In the course of many such reviews, relevant federal agencies were contacted to discuss certain projects and CZM's position on them. In all such reviews, the appropriate federal



agency was informed in writing of CZM's concerns and recommendations. These review processes have helped to shape CZM's policies on issue-specific bases and maintain a dialogue with various federal agencies.

The Office has also been deeply involved in the North Atlantic OCS oil and gas development process and has worked closely with the Bureau of Land Management, the U.S. Geological Survey, the U.S. Coast Guard and the federal Office of Coastal Zone Management. Our responses to OCS-related issues have served as an indication of overall CZM policy and our continuing exchange with these agencies has provided a direct state/federal information link.

The Program has also established a strong citizen participation effort which has included sub-regional meetings to discuss the Plan and solicit input. These meetings have called for open participation and have been announced regularly in CZM's newsletter, "Coastlines", distributed to all CZM federal contacts. The very frequency of these meetings and the diversity of meeting locations made possible attendance by Massachusetts-based regional federal offices, had they wished to. (For further details on citizen participation efforts see Public Participation Appendix.)

It is strongly felt by CZM that its efforts to establish both formal and informal working relationships with federal agencies of the Massachusetts CZM Program have provided the opportunity for and succeeded in establishing a full participatory process with its federal contacts.

# FEDERAL CONSULTATION CHART

Agency	1975-6 Meeting	4/15/76 Letter	Agency Response	Summer '76 Interview	Program Preview	Agency Response	CZM/Federal Meeting
Air Force		*		*	*	*	
Navy		*	*	*	*	*	
Corps of Engineers	*	*	*	*	*	*	*
HUD/Regl. Administ.		*	*	*	*	*	*
HUD/Flood	*	*	*	*	*	*	*
HEW		*	*	*	*		
MARAD	*	*	*	*	*	*	
EDA		*	*	*	*	*	*
USDA/SCS	*	*	*	*	*	*	
NERCOM		*		*	*	*	
NEREC	*	*	*	*	*	*	
NEIWPCC		*			*	*	
FRC		*	*				
GSA	*	*	*	*	*	*	
EPA	*	*	*	*	*	*	*
DOT		*	*	*	*	*	*
FPC		*	*	*	*	*	
FEA		*	*	*	*	*	*
ERDA		*	*	*	*	*	
Marine Fish- eries Comm.		*	*	(requested that N.A.M.F.C. be omitted from list)			
NMFS	*	*	*	*	*		
OCZM		*	*	*	*		
NOAA		*	*	*	*		

<u>Agency</u>	<u>1975-6 Meeting</u>	<u>4/15/76 Letter</u>	<u>Agency Response</u>	<u>Summer '76 Interview</u>	<u>Program Preview</u>	<u>Agency Response</u>	<u>CZM/Fed. Meeting</u>
DOI		*	*	*	*	*	*
NPS		*	*	*	*	*	*
USGS	*	*	*	*	*	*	*
BLM	*	*	*	*	*	*	*
Mines		*	*	*	*	*	*
BOR		*	*	*	*	*	*
USF&W		*	*	*	*	*	*

## SUMMARY OF MAJOR FEDERAL REACTIONS TO THE CZM PROGRAM PREVIEW

### BOUNDARY

- Subject:** BLM, NERBC, USDA/SCS, and the Bureau of Mines felt that the absence of the chapter on Boundary made difficult the assessment of impacts on a given agency's mission.
- CZM Response:** CZM agrees that the absence of boundary definition produced a significant difficulty for reviewers. However, boundary definition has largely been the responsibility of CZM's Citizen Advisory Committees. The breadth of the boundary, the measure of activity impact, and the state's and localities' abilities to adequately control activities have helped shape the boundary's present delineation. A revised chapter on the boundary, which shows the selected boundary, is now included in the Program Submission for formal review.
- Subject:** USF&W and the EPA both expressed concern that those areas designated as Areas for Preservation and Restoration be adequately protected by legal and institutional mechanisms.
- CZM Response:** Under the CZM Program's and the Secretary of Environmental Affairs' present review powers and statutory authorities sufficient protection is provided for APR's in the form of: more stringent imposition of existing authorities, closer scrutiny of state actions under the MEPA review authority, higher priority for funds under state acquisition programs, and additional prohibited uses. (See Policy 2.)
- Subject:** Questions about the restrictive authorities over APR's were raised by BLM. Concerns were articulated about the preclusive nature of such areas relative to BLM activities.
- CZM Response:** A very small portion of the Massachusetts coastal zone falls under the APR category. (See Boundary.) CZM is committed to the protection of these significant and fragile areas and will strongly encourage their protection through legal restriction.

### MARINE ENVIRONMENT

- Subject:** NERBC, DOI and EPA felt that coordination with 208 water quality planning activities had not been sufficiently considered in the development of CZM's water quality policies. Requests were made to better coordinate the CZM and 208 planning processes at state and local levels.
- CZM Response:** CZM has been very much aware of the importance of integrating the goals and objectives of the 208 and CZM programs. In an effort to strengthen the relationship between these programs, CZM has published 208 consistency guidelines and has distribu-

ted them to all regional 208 agencies. These guidelines directly address CZM coastal concerns and recommend considerations which 208 agencies should incorporate in developing water quality plans. In addition, CZM is reviewing all 208 outputs to ensure that the aims and objectives of both programs reinforce one another. Through its representatives on regional planning agency staffs (those same agencies responsible for 208 planning), CZM has attempted to integrate program goals at the community planning levels. Many of the 208 public participation committee members are, in fact, also members of the CZM Citizen Advisory Committees. Lastly, CZM has revised its policies pertinent to water quality to incorporate the comment received by federal agencies. (See policy 3.) In addition, a new section has been added on guiding coastal development through public infrastructure investments. This section deals with how CZM will be interacting with wastewater treatment facilities planning, thereby addressing the concerns which these federal agencies have raised.

Subject: USF&W expressed a concern that dredging decisions be made from an ecological/biological standpoint, and not solely from an engineering feasibility perspective.

CZM Response: CZM is acutely aware of the ecological and biological problems created by improper dredging and dredge spoil disposal methods. Permits for these projects -- both state and federal -- will be subject to review for conformance with CZM policies. Criteria upon which dredging projects will be assessed are being developed by staff at CZM for use by DEQE/Waterways. These criteria and guidelines -- together with CZM's direct involvement in evaluating significant proposals -- should ensure that optimum consideration of and protection for the marine environment are given under CZM management.

#### COASTAL HAZARDS

Subject: While the coastal hazards section met with significant approval, there were concerns raised by NERBC that the stringency of flood-proofing requirements for public facilities be sufficient to protect those structures and that such investments do not encourage further development in high-risk areas.

CZM Response: CZM agrees that public investment in structures servicing or located in flood-prone areas should be protected to the maximum extent possible. To this end, MCZM -- together with HUD NFIP -- is working toward higher structural standards for these facilities. In addition, CZM policies discourage public investment in facilities which may promote growth in damage prone areas or which may degrade natural buffers.

#### VISUAL ENVIRONMENT

Subject: Both USF&W and USDA/SCS recommended that the aesthetic quali-

ties of coastal wildlife sanctuaries and agricultural lands be considered as visually important resources.

CZM Response: CZM agrees that the properties of scenic access and the inherent qualities afforded by these lands should be considered as important visual assets. As such, the Visual Environment section has been revised to reflect these concerns. However, while CZM encourages protection of such visual access, the majority of control for ensuring this is at the local level. CZM has attempted to encourage local consideration and protection of these visual corridors and assets.

Subject: The Bureau of Mines expressed concern over who would conduct facilities design review, for which projects it would be applicable, and under what criteria design would be judged.

CZM Response: Design review appropriately belongs at the local level as most developments are primarily of local concern. CZM will rely on existing review process authorities to ensure that visual access is not impeded for the following: federally or state owned facilities whose construction is entirely financed by state or federal funds; public facilities whose construction will be financed in part by federal or state funds; and major developments in APR's which require federal permits. (See policy 13.)

#### PORTS AND HARBORS

Subject: The Maritime Administration emphasized the need for the CZM Program to adequately provide for the navigational and locational requirements of coastally dependent heavy industries.

CZM Response: In its discussion of Ports and Harbors, the CZM Plan has considered the needs of coastally dependent industries and has placed the accommodation of such industries in highest priority where necessary locational and transportation requirements exist. For example, where deepwater frontage is available, the Plan encourages location of those industries dependent upon such access and discourages inappropriate, preemptive uses. Expenditure of state and federal dredging improvement and maintenance funds will be supported for ports and harbors which now accommodate such industries. The Plan recognizes that needs may arise that cannot be accommodated in existing port areas, and allows the creation of new port areas if the need is of national or statewide importance and can be shown to considerably minimize damage to the marine environment.

#### RECREATION

Subject: The BOR was supportive of recreational policies which were

in concert with Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP) and encouraged a continued interchange with the state's SCORP agency, DEM, while advocating reliance upon SCORP as a future planning guide.

CZM Response: The CZM Program has worked closely with DEM and respects the recommendations of SCORP. We fully intend to continue our cooperative relationship with DEM over the course of Coastal Zone Management.

#### MANAGEMENT

Subject: General concerns were expressed by EPA, HUD and NERCOM with respect to the concept and viability of "networking" as a management scheme.

CZM Response: The aim of the CZM Program is to impose comprehensive, uniform policy guidelines for activities in the coastal zone. Under the Secretary of Environmental Affairs' regulation adopting a CZM Plan, those agencies administering funds or permits for specified coastal activities will be required to do so in a manner consistent with the CZM Plan. While the operative capabilities of "networking" are yet to be tested, CZM believes that its efforts over the past several months to refine and strengthen this concept will result in a successful management structure.

Subject: Both NERCOM and HUD expressed some reservations about the Program's reliance on MOU's as a compliance mechanism, particularly with respect to federal and non-EOEA agencies.

CZM Response: It should first be noted that the vast majority of the state's regulatory authorities are within EOEA. With regard to the Energy Facilities Siting Council, whose authorities bear directly upon the coastal zone, a precise MOU has been developed and is expected to be successfully operative. Further, all state agencies have been provided with an opportunity to review and comment on the Plan. Our efforts to accommodate agency concerns and persuasively argue our policies have indicated that state agency investment programs will be administered in support of the Plan. An opportunity to review state funded projects is provided through the MEPA process under EOEA's Office of the Secretary; thereby helping to ensure state agency compliance with the Plan.

Subject: HUD questioned whether or not the technical assistance activities of the CZM Program would duplicate those of RPA's or the state's Department of Community Affairs.

CZM Response: First, the technical assistance services provided by CZM are unique to the Program. Under the Section 305 regulations CZM is mandated to "... (take) a lead role in determining research and technical assistance priorities...". These services are provided by CZM staff which include marine biological and geological experts as well as planners familiar with problems peculiar to the coastal zone. DCA is charged with special

technical assistance duties independent of those of CZM. Among these is the Department's expertise in local zoning problems which CZM has encouraged relative to advising coastal communities on zoning issues and the adoption of by-laws. RPA's offer technical assistance on a wide range of concerns, but do not have the unique capabilities or mandate of CZM. CZM anticipates a close coordination with RPA's and DCA to ensure that all coastal requests for technical assistance are appropriately handled.

Subject: A number of questions and concerns about "federal consistency" were raised, among them the MARAD's, FPC's, DOT's and Corps' question of which federal licenses and permits were to be reviewed under CZM.

CZM Response: A listing of federal licenses and permits and the principal policies by which federal actions would be deemed consistent are included in the Program Submission under "federal consistency". All federal licenses and permits to be reviewed by CZM under the management phase are included here.

Subject: The DOT and Navy argued that the federal consistency regulations should be revised to reflect greater authority by federal agencies.

CZM Response: CZM has no authority to alter the Section 307 regulations regarding "federal consistency". The Program's present position on federal consistency is based on interim federal guidelines published under OCZM's draft federal consistency regulations. Until such time as OCZM issues final regulations, no permanent decision on the state/federal authorities under federal consistency will be made.

Subject: Both HUD and the USAF were concerned about reliance on the A-95 process as an informational tool for federal consistency, citing limited program coverage and frequent federal non-compliance with the process.

CZM Response: For the above cited reasons, as well as concern for an expeditious review process, the CZM Program will strive to establish a direct information exchange with federal funding agencies and applicants to ensure a comprehensive and timely certification process.

Subject: A basic question regarding the "enforcement" of federal consistency was raised by HUD and NERCOM. It was felt that the disagreement procedures were not sufficient to ensure federal compliance.

CZM Response: CZM has submitted comments on the draft federal consistency regulations which address the state's concern for ensuring federal compliance. Again, however, the regulations are subject to final drafting by OCZM and little can be accomplished with regard to evaluating the enforcement mechanisms in the absence of final regulations.



## ENERGY

Subject: The need for expanded discussion of mineral extraction in the coastal zone was raised by BLM, Corps, and the Bureau of Mines. They expressed concern that the Plan not be prohibitive with regard to ocean and near shore mining.

CZM Response: CZM has included a discussion of mineral extraction in its revised Energy Chapter. Specific reference is made to the potential for the extraction of coal and offshore oil and gas in Policy 33. It should be noted that Massachusetts CZM must comply with the established provisions of the Commonwealth's Ocean Sanctuaries Acts with regard to mineral extraction in certain areas of the coastal zone.

Subject: BLM and USGS expressed concern that the Energy Chapter be revised with inclusion of Massachusetts' OCS policies.

CZM Response: In the revised Energy Chapter, CZM has included an expanded discussion of the potential for OCS development off the Massachusetts coast. CZM recognizes the need for meeting future energy demands and acknowledges that in some instances exploration of the Outer Continental Shelf may be regarded a matter of national interest. The CZM Plan therefore makes provision for the development of OCS resources, but unequivocally reiterates the need for the appropriate controls or conditions so as to mitigate the potential for adverse environmental impacts. OCS development is addressed in Policy 33.

Subject: USDA/SCS commented on the need for discussion of alternative energy sources in the CZM Plan.

CZM Response: The revised Energy Chapter includes both an expanded discussion of energy conservation measures and the potential for developing alternative energy sources for Massachusetts. The Commonwealth's Energy Conservation Plan is outlined and a brief assessment of supplementary modes of energy generation is offered. CZM recognizes the practical need for a continued supply of traditional forms of energy, but hopes that the intense demand for these limited resources might be diminished through both conservation and development of supplementary energy sources.

Subject: NERCOM and ERDA were concerned with whether or not the Energy Facilities Siting Council would take socio-economic and environmental impacts into consideration when making a decision on facility siting.

CZM Response: By legislative mandate the EFSC is required to make a comprehensive assessment of these factors before making a siting decision. In addition, all Federal Power facilities must prepare an Environmental Impact Statement addressing both socio-economic and environmental impacts prior to project approval. Such projects must receive the endorsement of other appropriate state and federal agencies through the NEPA process.

Subject: The need to include quantitative projections of energy demand relative to growth and provide assurance that the state will accomodate the expansion of energy sources in amounts sufficient to meet the future needs of the state and region were expressed by FPC and NERCOM.

CZM Response: Massachusetts CZM recognizes the need for continued economic growth for both the state and the region. Similarly, the CZM Plan provides for a commensurate expansion of energy sources to meet the demands of this growth. The object of the Plan is, however, not to make quantitative projections of energy demand, but rather to generate policies which will ensure that decisions on energy facility siting and development of energy-related coastal resources reflect an awareness of the unique ecological sensitivity of the coastal zone. At the same time, CZM has a responsibility to reconcile the multitude of legitimate interest competing for the use of our limited coastal resources. To this end, CZM will be closely coordinated with the state's Energy Policy Office, the EFSC and MEPA staff through its management process.

Subject: BLM, FPC, NERCOM and EPA were concerned with the way in which CZM would coordinate with the Energy Facilities Siting Council.

CZM Response: Since the release of the Massachusetts CZM Program Preview, a formal Memorandum of Understanding has been signed by the EFSC and CZM. As a result of this agreement, the EFSC has agreed to adopt the criteria of the CZM Plan on facilities siting as part of its review process. In addition, the state's Secretary of Environmental Affairs is a member of the EFSC.



EVELYN F. MURPHY

SECRETARY

April 15, 1976

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*100 Cambridge Street*  
*Boston, Massachusetts 02202*

Robert Gift  
Chief, State Planning Division  
Bureau of Outdoor Recreation  
Department of Interior  
Federal Office Building  
600 Arch Street  
Philadelphia, PA 19106

Dear Mr. Gift,

The Massachusetts Office of Coastal Zone Management, located administratively in the Executive Office of Environmental Affairs, has been working for about a year and a half developing a comprehensive coastal land and water use plan and proposed management system for Massachusetts. The Massachusetts Coastal Zone Program operates under the Federal Coastal Zone Management Act of 1972 (P.L. 92-583).

The Massachusetts coast line, extending for 1200 miles, supports commerce, industry, transportation, housing, tourism, recreation, fishing, and a myriad of other coastal resource dependent uses. It is the goal of Massachusetts CZM "to enhance, protect, restore, and develop" the resources of the Commonwealth's coastal zone for this and future generations.

The Coastal Zone Management Act, as you are aware, requires broad public and governmental participation in the development of a state's plan and management system. Already, a broad public participation program has drawn together citizens, user groups, and officials from the local, regional, state, interstate, and federal levels of government. It is time now to involve federal agencies in the development phase of this vitally important program on a more formal basis.

Specifically, section 307 (b) of the Act states: "The Secretary of Commerce shall not approve the management program submitted by a state pursuant to section 306 unless the views of federal agencies principally affected by such program have been adequately considered..." Of prime importance to federal agencies are requirements for consistency with state programs. Section 307 (c): "Each federal agency conducting or supporting activities directly affecting the coastal zone...or under taking any development project in the coastal zone...or any applicant for a required federal license or permit to affect an activity affecting land and water uses in the coastal zone of that state...shall conduct or support those activities, or ensure that the project is to the maximum extent practicable consistent with approved state management programs."

You have been preliminarily identified as the contact person at your agency on Massachusetts Coastal Zone Management planning and issues. If valid, please confirm in writing to this office.

Once confirmed, we will begin to mail you various planning products for your review and comment. The first series of papers will be individual chapters from our staff's "Survey of Uses." The Survey of Uses is an environmental and economic assessment of the primary coastal uses in Massachusetts. Among factors, the Survey will assess the necessity for a given use to be located along the coast. The use papers will assist in setting priorities for future uses along the Massachusetts coast.

Other products will include reports and maps on critical resource areas such as erosion and flooding, recreation, visual access, and coastal ecosystems; an analysis of land use change over time; and staff work on the development of a management system to insure implementation of CZM plans.


Upon confirmation, you will also be placed on the CZM mailing list to receive Coast Lines, the monthly newsletter of Mass. CZM, and the other publications of the CZM staff.

To provide you with background material, I am enclosing a copy of the two most recent issues of Coast Lines and a copy of our publication Living by The Sea, which describes the operation of the program. For further information please address all replies to:

Mr. Matthew B. Connolly, Jr.  
Executive Office of Environmental Affairs  
Office of Coastal Zone Management  
100 Cambridge Street  
Boston, MA 02202  
617-727-2808

I look forward to a speedy confirmation, and a fruitful and cooperative working relationship in the month's ahead. It is my hope that you may wish to meet with our staff in the future and more fully explore the substantive aspects of our CZM program and further articulate your agency's federal interests and concerns.

Sincerely,

  
Evelyn F. Murphy  
Secretary

MK/pb

Enclosures



COASTAL ZONE  
MANAGEMENT

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*100 Cambridge Street*  
*Boston, Massachusetts 02202*

November 17, 1976

Dear

I am pleased to send you this copy of the MASSACHUSETTS COASTAL ZONE MANAGEMENT PREVIEW--A preliminary Program for Public Review (Program Preview), for your review and comment.

The Preview represents months of extensive work on the part of members of the Governor's Task Force on Coastal Resources and the CZM staff. Some two years of staff effort gathering and evaluating information about coastal resources and uses are drawn together in a set of proposed policies in the Preview. The policy areas include the marine environment, energy and energy facility siting, port and harbor development, recreation, coastal hazards, and the visual environment. The Preview includes a description of management, as well as a statement of Task Force goals, objectives, and history.

Most importantly, the CZM Program Preview represents the Commonwealth's commitment to involve federal agencies and programs in the development of a draft coastal zone management plan. It is essential that we have your participation. The Program Preview represents an early opportunity for you to evaluate and comment on policy proposals, management tools, and federal consistency requirements.

The Coastal Zone Management Act, as you are aware, requires broad public and governmental participation in the development of a state's plan and management system. Specifically, section 307 (b) of the Act states: "The Secretary of Commerce shall not approve the management program submitted by a state pursuant to section 306 unless the views of federal agencies principally affected by such program have been adequately considered..." Of prime importance to federal agencies are requirements for consistency with state programs. Section 307 (c): "Each federal agency conducting or supporting activities directly affecting the coastal zone...or undertaking any development project in the coastal zone... or any applicant for a required federal license or permit to affect an activity affecting land and water uses in the coastal zone of that state...shall conduct or support those activities, or ensure that the project is to the maximum extent practicable consistent with approved state management programs."

The Program Preview has been prepared as a document for public and governmental review. We are asking CZM Citizen Advisory Committee members, other interested citizens and officials, members of the Governor's Task Force, and state and other federal officials to review the Program Preview at this time. From this concert of public review we hope to prepare a draft plan that meets the needs of coastal communities, coastal regions, and state and federal government.

You will note that Chapter 4 on coastal regions consists of a description of work to come. This part of the plan is being completed by Citizen Advisory Committee members with CZM and regional planning staff assistance. After the regional chapters are completed, and a federal and state review is well underway, we look forward to preparing a draft plan and formal submission to the federal Coastal Zone Management Office during the winter of 1977. Our formal submission to the federal Coastal Zone Management Office will begin yet another formal public review process - the federal environmental impact assessment review and public hearings.

However, the optimum time for your review and comment is now. I have set Friday, December 17, 1976 as the deadline for receipt of written comments. This provides you with 30 days for an initial review. My staff will then have ample time to meet with you or your staff during the early winter to clarify issues and resolve conflicts.

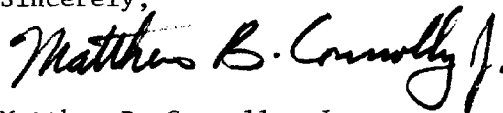
I am most interested in having your response to substantive policy proposals as well as to the means of implementation. Implementation measures, including federal program consistency, are included in each subject policy area of Chapter 2. Chapter 3 on Management also includes a section on federal consistency. Please pay special attention to these areas.

This summer, CZM representatives met with members of your agency. Your staff defined a need for substantive information on Massachusetts CZM. The Program Preview meets this concern. In the months ahead, I look forward to working with you to ensure that your agency's particular coastal zone related programs are addressed in an equitable and consistent manner.

The federal Coastal Zone Management Act of 1972 provides a unique opportunity for those of us who work or live in Massachusetts to improve the management of our fragile and finite coastal resources. Your continued participation will help to ensure this goal.

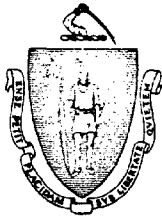
I look forward to your comments by December 17, 1976.

Sincerely,



Matthew B. Connolly, Jr.  
Chief Planner

MBC:ask  
enclosure



COASTAL ZONE  
MANAGEMENT

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*100 Cambridge Street*  
*Boston, Massachusetts 02202*

January 27, 1977

Mr. Joseph L. Ignazio  
Chief, Planning Division  
New England Division  
Corps of Engineers  
424 Trapelo Road  
Waltham, Massachusetts 02154

Dear Mr. Ignazio:

In response to your December 17th letter of comment on Massachusetts' Coastal Zone Management Program Preview, C.Z.M. met with staff from the New England Division of the Corps on January 19th to discuss all coastal zone-related concerns raised by your Office. At this meeting, we invited Corps representatives to surface any points regarding the Preview which had not been articulated in their written comments, thus ensuring that all considerations would be aired prior to preparing a revised document for "306" program approval by O.C.Z.M.

A specific concern for C.Z.M.'s position on the mining of Narragansett Basin coal led to a more general observation that the document was deficient in not addressing mining. Other federal agencies have made similar comments, and we shall be including a section in the Energy Chapter on mineral extraction in our program submission.

In addition, a number of project-specific concerns raised in the December 17th letter were discussed in the context of C.Z.M. policy. C.Z.M. indicated, to the satisfaction of Corps attendees, that many of these particular concerns would be picked up in the program's Regional Chapters to be completed for the program submission to O.C.Z.M. in early spring.

Finally, individual language changes relating to the Corps permit program were adopted for inclusion in the program submission.

Beyond the meeting's productivity on these particular issues, we felt that the cooperative and constructive attitude of the Corps towards the C.Z.M. program provided an important groundwork for a continuing interchange regarding the use of federal consistency. Under an approved management program, M.C.Z.M. seeks to maintain and enhance its relationship with the Corps regarding the New England Division project activities and its administering of licenses and permits. Thank you for the time and effort you and your staff have devoted to the preparation of our upcoming program submission.

Sincerely yours,

A handwritten signature in black ink, appearing to read "S. Russell Sylva", with a stylized flourish at the end.

S. Russell Sylva  
Assistant Secretary  
Environmental Affairs

SRS:SC:sar

cc: Gardner Blodgett, Corps of Engineers  
Oscar Arpin, Corps of Engineers





COASTAL ZONE  
MANAGEMENT

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*100 Cambridge Street*  
*Boston, Massachusetts 02202*

February 18, 1977

David W. Hays  
Regional Representative of the  
Secretary  
Department of Transportation  
Transportation Systems Center  
Broadway  
Cambridge, MA 02142

Dear Mr. Hays:

Thank you for the time and effort you have devoted to review of the Massachusetts Coastal Zone Management Program's Program Preview. Your willingness, on behalf of DOT, to contribute to our planning efforts and your invitation to include a member of the CZM staff at an inter-departmental DOT meeting have been very much appreciated. I am enclosing a summary of points raised and discussed at our January 20 meeting in order to confirm its results. Subsequent to that meeting and your recent letter in response to some of our questions, the following revisions will be made.

We appreciate the problems which the draft federal regulations on federal consistency have caused for federal agencies and states alike. While we, as a state program, would argue in favor of greater state responsibility in decision making processes, we must ultimately abide by the decisions of OCZM as published in its final consistency regulations. We would be pleased to discuss the implications of those regulations with members of DOT when they are adopted. In addition, CZM understands the complexity of the transportation planning and construction processes and does not wish to hamper with redundant reviews an already lengthy process. We will attempt to establish a reasonable review system together with Massachusetts' Department of Public Works.

With respect to your comments on licenses and permits, CZM has indicated that it does have an interest in reviewing both permits for construction of bridge structures across navigable waters and licenses for the location, construction and operation of deepwater ports. As you suggested, we do intend to establish specific memoranda of understanding with the Coast Guard to outline our interests and concerns in these matters. Under our current submission schedule, however, these memoranda will not be developed before our draft program submission this spring.

David Hays

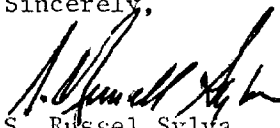
Page 2

As you have suggested under your comments on federally assisted projects, we have neglected to develop a formal relationship with the Massachusetts Aeronautics Commission and will remedy that omission. Also raised was a request for the exemption of Coast Guard Search and Rescue facilities from compliance with CZM policies where those policies would prohibit construction. While CZM, to no extent, wishes to unreasonably restrict the Coast Guard in its essential rescue efforts, we do intend to review direct developments of SAR facilities on a case-by-case basis. We are confident that essential facilities will be developed where necessary, and that their location will be satisfactory to both DOT and CZM.

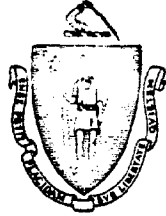
There were a number of technical inaccuracies which were outlined in your December 16 letter which will be corrected in the document. We appreciate the benefit of your expertise in clarifying these points.

Again, CZM has been encouraged by the cooperative attitude of DOT and looks forward to working with you over the coming months.

Sincerely,

A handwritten signature in dark ink, appearing to read "S. Russel Sylva", is written over the typed name.

S. Russel Sylva  
Assistant Secretary  
Executive Office of Environmental  
Affairs



COASTAL ZONE  
MANAGEMENT

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*100 Cambridge Street*  
*Boston, Massachusetts 02202*

February 10, 1977

Mr. Edward A. Thomas  
Acting Regional Director  
Federal Insurance Administration  
Housing and Urban Development  
John F. Kennedy Federal Building  
Boston, Massachusetts 02203

Dear Mr. Thomas:

At a meeting on January 21st, representatives of C.Z.M. met with you and your staff to discuss a number of improvements to the C.Z.M. Program Preview suggested by you in a letter of December 17, 1976. In the interest of ensuring that your concerns will be adequately accommodated in the revised document to be submitted to Washington in early spring, I have summarized below the major points raised at the meeting.

In general, we concur that a more balanced view of the effectiveness of the National Flood Insurance Program should be presented. The discussion in the text should be revised to include the following:

- 1.- The N.F.I.P. will reduce loss of life and property over the long term.
- 2.- The structural standards required of new development will discourage building in hazardous areas where the costs of compliance would be prohibitive.
- 3.- The provision of flood insurance for existing development will not encourage relocation from hazardous areas and may help to stimulate conversion of seasonal homes to year-round use.
- 4.- Continued public subsidy in hazardous areas may result in pressure for construction of publicly funded protection structures or other public services.
- 5.- Implementation of the program will prevent alteration of natural buffers in high hazard areas, but not necessarily in other zones within the 100 year flood zone.

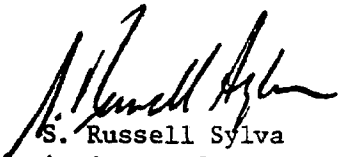
It was also agreed that the provisions of the N.F.I.P. requiring setbacks in erosion prone areas, anchoring of structural supports, use of flood resistant materials, and flood proofing of utilities should be noted in the text.

Several points were raised concerning coordination between F.I.A. and C.Z.M. in achieving mutual objectives. We are particularly pleased with the spirit of mutual cooperation expressed by you and your staff and look forward to close collaboration in the future. In particular, as C.Z.M. moves to the implementation phase of its program, we expect to be able to provide technical assistance in the developing of zoning ordinances and, as you suggested, we are very interested in coordinating this effort with F.I.A. as individual communities prepare their management regulations for the regular phase of the N.F.I.P.

Additionally, we appreciate the opportunity to provide guidance in determining priorities for F.I.R.M. studies. A possible suggestion would be to assign priority to mapping towns that contain areas designated as Areas for Preservation and Restoration in the C.Z.M. plan. Maps displaying these locations will be presented in the regional sections of our submission to Washington in early spring.

C.Z.M. appreciates the time and effort you and your staff have spent in assisting the preparation of our Program submission. Your guidance and expertise have made a significant contribution to this document and we look forward to a continuance of this kind of cooperation. If you have any questions concerning the points above, please feel free to contact us.

Sincerely,



S. Russell Sylva  
Assistant Secretary  
Environmental Affairs

SRS:BR:sar



COASTAL ZONE  
MANAGEMENT

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*100 Cambridge Street*  
*Boston, Massachusetts 02202*

January 28, 1977

Frank V. Del Vecchio  
Assistant Regional Administrator  
for Community Planning and Development  
Department of Housing and Urban Development  
John F. Kennedy Federal Building  
Boston, MA 02203

Dear Mr. Del Vecchio:

In response to your December 17 letter of comment on Massachusetts' Coastal Zone Management Program Preview, CZM staff met with Sheldon Gilbert of HUD to discuss the points raised by your Office in that letter and to air any outstanding concerns HUD may have with respect to the forthcoming MCZM formal program submission. Following is a synopsis of the major points of discussion.

Concern for dependence upon A-95 as a CZM information mechanism was based on both the system's limited program coverage as well as the poor performance record of federal agencies in cases of negative comment. CZM, cognizant of these flaws in the A-95 process, will follow through on HUD's recommendation that this Office seek Federal Regional Council assistance in ensuring federal responsiveness. In addition, we are looking into a direct grant information exchange with federal agencies and grant applicants which would enable CZM to act on an application's consistency with the approved CZM Program prior to entry into the A-95 review process, thereby informing regional and state clearinghouses of CZM concerns in advance of A-95 review. A system of checks will eventually be established which will likely rely upon the state's present grant award information system within the Office of Federal/State Resources.

A second central concern was raised regarding CZM's coordination with state and regional work on HUD's land use element requirements. There are two direct opportunities to help ensure compatibility. First, CZM will discuss with RPA's and OSP the status of their work on these elements to identify any potential land use conflicts. Second, CZM will have the Program's regional chapters -- which verbally and geographically define areas of special concern -- in place for our program submission in early spring. These chapters will serve to alert those state and regional agencies to any potential land use conflicts prior to their 1978 completion deadline.

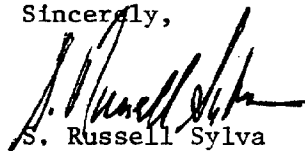
Frank Del Vecchio  
Page 2

Also in question were the mechanics of CZM policy implementation measures. It was pointed out that while state, federal and local programs and authorities could serve to implement individual policies, no substantive discussion of their precise utilization was given. We indicated that program submission would clarify and specify how policies are to be implemented.

Finally, some general observations concerning management implementation procedures were discussed in reference to the proposed networking system. Upcoming proposed revisions and additions to the management plan -- including submission of Secretarial regulations, completion of the regional chapters, and refinement of networking's operational guidelines -- were seen as satisfactorily responding to these concerns.

CZM appreciates the time and effort you and your staff have devoted to the preparation of our upcoming program submission. Your expertise in evaluating land use implications and your cooperative attitude in working with CZM staff have contributed greatly to our program's efforts. We look forward to a continued, productive relationship with your Office in the upcoming months.

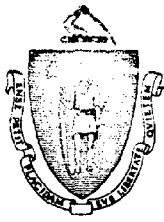
Sincerely,



S. Russell Sylva  
Assistant Secretary  
Environmental Affairs

SRS:SC:sac

cc: Sheldon Gilbert, HUD



COASTAL ZONE  
MANAGEMENT

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*100 Cambridge Street*  
*Boston, Massachusetts 02202*

January 31, 1977

John A.S. McGlennon  
Regional Administrator  
U.S. Environmental Protection  
Agency - Region I  
J.F. Kennedy Building  
Boston, MA 02203

Dear Mr. McGlennon:

In response to your letter of comment on Massachusetts' Coastal Zone Management Program Preview, CZM met with Mr. Steve Ells and Mr. Bart Hague of your staff on January 18 to discuss EPA's coastal zone related concerns. Recognizing that the requested deadline for written review comments was limiting, CZM encouraged EPA to take the opportunity at that meeting to raise any outstanding concerns not articulated in its December 27 letter. Outlined below are the major points raised and discussed with the EPA.

Of central concern was the specificity of content proposed for the Memoranda of Understanding to carry out "networking". EPA felt some example of MOU content was necessary to assess the effectiveness of that coordinative mechanism. In particular, the MOU with the Energy Facilities Siting Council was cited as being directly related to EPA air and water quality concerns and one which EPA perceived as particularly relevant. CZM indicated that the EFSC MOU together with a draft of the Secretary of Environmental Affairs' regulation adopting a Coastal Zone Management Program would be included in our early spring Program Submission.

More generally, some reservations were expressed about the overall section on networking and a refinement of that concept was requested. A number of federal agencies have voiced similar concerns, and the management chapter will be revised accordingly. In addition, the regional chapters -- which address policy application and special area designations -- will help define the relationship of local input to the CZM plan.

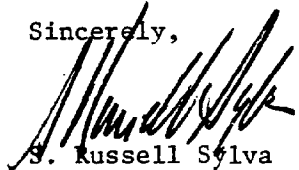
Consideration of EPA air and water quality requirements were the focus of much of the afternoon's discussion. In particular, it was recommended that increased recognition be given to the impacts which coastal growth, and especially the siting of energy facilities, may have on air quality standards. We agreed

such recognition is lacking in the Preview and that the deficiency shall be corrected in our Program Submission.

Vis-a-vis water quality concerns, CZM noted its close coordination with 208 areawide agencies over the past months. We will be reviewing all 208 outputs from coastal areas as they are completed against our published 208 consistency guidelines. Many of our CZM Citizen Advisory Committee members also serve on 208 citizen participation committees and CZM staff persons within coastal RPA's have been alerted to the need for increased CZM/208 coordination. By ensuring consistency with 208 in CZM plans, the potential for conflict is dramatically reduced. Moreover, the Program Submission will include an additional section on guiding growth through public infrastructure investments. This section will detail the role and stance CZM will take toward major facilities planning, including sewer and highway investments. We trust that these efforts, together with significant program additions, will satisfy those concerns expressed by EPA.

CZM appreciates the time and effort EPA staff have spent assisting in the preparation of our Program Submission. Your guidance and expertise on environmental matters have made a significant contribution to this document, and we look forward to a continuance of this kind of cooperation and exchange.

Sincerely,



S. Russell Silva  
Assistant Secretary  
Environmental Affairs

SRS/SC/sac

cc: Steve Ells, EPA  
Bart Hague, EPA





COASTAL ZONE  
MANAGEMENT

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*100 Cambridge Street*  
*Boston, Massachusetts 02202*

February 8, 1977

Roger Sumner Babb  
Special Assistant to the  
Secretary  
Department of the Interior  
JFK Building, Room 2003 N  
Boston, MA 02203

Dear Mr. Babb:

In response to the letters of comment from the Department of Interior and its divisions, Massachusetts' Coastal Zone Management staff met with the Department of Interior, the National Park Service, the U.S. Fish and Wildlife, the Bureau of Land Management, the U.S. Geological Survey, and the Bureau of Mines on January 21, 1977 to discuss their concerns with respect to the CZM Management Preview -- A Preliminary Program for Public Review. Both individual written comments and general coastal zone related concerns were discussed among the participants.

The single most outstanding concern dealt with the status of the Program Preview and its relationship to our formal program submission in early spring. A clear misunderstanding of the Preview's purpose -- that of a program draft -- became the focus of the morning's discussion. DOI staff indicated that their review had been based on the presumption that the Preview was an informal document, and that a draft submission would be forwarded to them for review prior to formal submission of the program to OCZM. There were a number of problems associated with the Preview: DOI staff had not reviewed it with what they felt as a sufficiently critical eye; there were several sections, not completed in the Preview, which they felt were central to their evaluation of the program; the comment period under formal submission (with addition of those sections absent in the Preview) was expected to be insufficient for thorough review.

Specifically requested for review prior to program submission were a revision of the energy chapter -- with additional sections on mineral extraction and OCS --, a copy of the Secretary of Environmental Affairs' regulation adopting a CZM Plan, the Memorandum of Understanding with the Energy Facilities Siting Council, an expanded discussion of federal consistency, a boundary description and the regional chapters (together with special area maps).

While we can appreciate the problems which both the misinterpretation of the Preview and the absence of certain sections present for DOI reviewers, we are ourselves under a stringent time frame from OCZM for program submission. Moreover, the gist of DOI concerns regarding sections not in the Preview have been transmitted to us both in the review letters on the Preview and in the previously provided formal DOI guidance on the national interest in the coastal zone. Thus, we feel confident that we have been alerted to DOI concerns and can accomodate or take cognizance of them in preparing our program submission.

As further steps, DOI agencies agreed to proceed with a more intensive review of the Program Preview. In addition, we agreed to distribute those draft sections to DOI, as available, to be included in the program submission. These include, to date, a revised federal consistency section (including permits and licenses requested for CZM review), a section discussing the national interest as it relates to the CZM plan, and a chapter on the coastal zone boundary. (See enclosed.) In different stages of development are the Energy Facilities Siting Council MOU, the Secretary's regulation adopting a CZM plan, a policy discussion on Outer Continental Shelf exploration and development, a section concerning mineral extraction, and regional chapters; each of which will be made available to DOI should they be sufficiently prepared in advance of formal submission.

With this understanding, we proceeded with discussion on individual agency concerns as articulated in each of the agencies' written remarks. Following are synopses of those discussions.

#### U.S. Fish and Wildlife

There were a number of specific requests for corrections of inaccuracies and additions in the text. With respect to designating wildlife as an aesthetic resource, CZM agrees that wildlife should and will be included under the considerations for the Visual Environment. An additional concern for the involvement of the Department of Fisheries, Wildlife and Recreational Vehicles in the review of activities impacting marine resources and habitat will be met through the networking system. As discussed at this meeting, networking under 306 calls for coordination of EOEa agencies based on uniform application of CZM policies and guidelines. This coordination will include the Department of Environmental Quality Engineering and the Department of Environmental Management which will receive financial assistance from CZM to provide staff to carry out their wetlands programs which, because of the protection they afford wildlife habitat, are of key concern to USF&W. Allocation of 306 funds to EOEa agencies will be presented in CZM's 306 grant application and all activities of CZM funded staff will be reviewed on a quarterly basis to evaluate performance and ensure compliance under the guidance of OCZM. Finally, control/prohibition of development will be enacted for those areas designated as areas of preservation or concern and CZM maps and guidelines will serve as a first step deterrent to improper development proposals.

#### Bureau of Outdoor Recreation

BOR was supportive of the Preview and particularly in favor of its intent to meet coastal recreational needs. It was recommended that the Department of Environmental Management be cited as an implementation arm for Policy 24 on developing trail links and that CZM continue to work closely with that agency in recreational planning. CZM recognizes the integral role which SCORP will play in defining recreational needs and goals and will maintain both strong formal and informal connections with that agency.

#### Bureau of Land Management

The Bureau of Land Management's CZM related concerns focused on OCS development and the program's impact on future OCS activities. (As noted earlier, an addition to the Preview addressing OCS will be in the program submission.) Specifically, BLM was concerned about the relationship between CZM and the Energy Facilities Siting Council and both group's response to pipeline corridors located in designated ocean sanctuaries. An MOU with the EFSC which defines its formal relationship with CZM will be included in our program submission. Should the MOU be finalized sufficiently in advance of our spring submission date, CZM will separately forward the document to BLM for its review. This will include an understanding of CZM/EFSC's authority over pipeline construction. Further, with respect to the national interest clause and the requirement for definition of areas of particular concern in the CZM Act, both a section on the national interest and a geographic and verbal description of areas of particular concern will be part of the program submission. These should serve as a basis for a more comprehensive and detailed understanding of the program's goal and policy application. (A draft of the national interest section has been sent to BLM for its current review.)

#### National Park Service

While no written comments have yet been submitted by NPS, some concerns were raised at the January 21 meeting. It was requested that archeological and historical sites be considered in relation to CZM objectives as they present important cultural assets. In particular, it was agreed that the program's chapter on the visual environment would include unique cultural resources as visual considerations.

#### Bureau of Mines

In addition to the Bureau of Mines, a number of federal agencies have expressed an interest in an expanded discussion of mineral extraction. CZM will include a section on ocean and on-shore mining which addresses these concerns. The Bureau also indicated some reticence about the "design review" process and the criteria used to evaluate aesthetics. This review will be limited to projects involving public funds and will be primarily guided by

Roger Sumner Babb  
Page 4

visual access considerations. Lastly, with respect to boundary we have enclosed a copy of the draft boundary section for the Bureau's review.

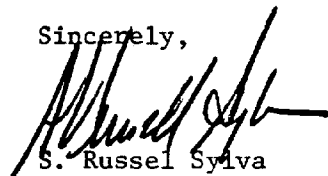
U.S. Geological Survey

Many of the concerns expressed by USGS in its written comments were similar to those of other DOI agencies. As indicated earlier, an additional section will address CZM's position on OCS leasing and production -- primary coastal concerns of the USGS. Again mining was raised, and CZM agreed that this subject warranted particular attention in the plan as a resource which must not be blanketly prohibited. The last central concern involved both the coastal zone boundary and a refinement of the Preview's discussion on federal consistency, for which drafts are enclosed.

In light of DOI's general concern with respect to the submission schedule, CZM will make every effort to provide DOI with draft copies of requested program materials as available. Again, however, the stringency of this schedule may prohibit distribution of some sections prior to program submission. It is an unfortunate, but unavoidable, fact that much of our work's development must continue up to our spring deadline and therefore may only be available as part of CZM's formal submission.

CZM feels that both the range of concerns expressed at this meeting, the previously transmitted formal DOI guidance on national interest, informal consultations with individual DOI agencies on OCS matters, together with a more thorough review of the Preview should give us a clear understanding of DOI concerns and allow for their incorporation in the program submission. We look forward to a continued and productive interchange with DOI over the coming months and thank you for the time and effort you have devoted to our program.

Sincerely,



S. Russel Sylva  
Assistant Secretary  
Environmental Affairs

enc. boundary section draft  
federal consistency section draft  
national interest section draft  
cc: Robert Ryder, DOI  
Jack Benjamin, NPS  
Curt Laffin, USF&W  
Ralph Andrews, USF&W  
Bill Barton, Mines  
Bill Overstreet, USGS  
Bill Doyel, USGS  
Abby Miller, BLM



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## Appendix D: Coordination with Existing Plans

## COORDINATION WITH EXISTING PLANS

The Massachusetts CZM Program, from its very beginning in the Spring of 1974, was determined to make maximum use of existing governmental plans both to guide the direction of the program and to provide needed data. Plans were identified; contracts made with governmental agencies responsible for these plans; plans were examined; pertinent portions incorporated into the program; and conflicts, if any, identified. This coordination process is described in the following sections.

### LOCAL GOVERNMENT PLANS

In the first year of program development, coastal regional planning agencies were contracted by CZM to report on local government plans and their pertinency to coastal zone management. In the spring and summer of 1975, two law student interns gathered and analyzed the zoning by-laws, ordinances, and maps of all communities in the coastal zone. Also, CZM staff collected copies of existing community open space, redevelopment, port and harbor development and historic district plans.

Coordination with these plans was achieved through membership by local governmental agencies on regional citizen advisory committees (see Appendix B: Public Participation - Public Information). In addition, CZM staff met during the second and third year of program development with individual municipal redevelopment authorities, and selected port and harbor and economic development commissions. In the course of preparing the chapter on coastal regions, meetings were held in each coastal community to discuss the CZM program and its policies. Selectmen, City Council members, planning board members, conservation commission members, industrial development commission members and recreation department officials were invited to these meetings. Starting in the summer of 1976 and continuing through the winter of 1977, CZM staff arranged these meetings for the Upper North Shore, Lower North Shore, South Shore, and Plymouth Bay regions. During the same time the Cape Cod Planning and Economic Development Commission and the Southeastern Regional Planning and Economic Development District, under contract to CZM, set up similar community by community meetings for Cape Cod, Buzzards Bay, and Mt. Hope Bay. For the Boston Harbor region, a CZM staff member met individually with redevelopment authorities, conservation commissions, and municipal planning offices. In all these town-by-town meetings, the policy objectives of the CZM program were presented; community plans and goals for specific geographic areas discussed; and the possibility of incorporating these into the CZM program explored.

As a result of these coordination efforts, the CZM program, in its chapter on coastal regions, reflects the several priorities of local government studies or plans with respect to (1) major port and harbor development and urban waterfront development (such priorities are reflected in the SADA designations) and (2) coastally related open space and recreation acquisitions.

With respect to local government plans which have been adopted and have the force of law, that is municipal zoning, the CZM program is consistent with locally designated historic districts (see Policy (14)) and with the general pattern of zoning in interior areas of the coastal zone. In some other respects, however, the CZM program does conflict with existing municipal zoning. These conflicts are identified in the following table as are the dates of CZM town-by-town meetings. These conflicts are of three basic types:

- (1) a. municipal zoning allows for uses on salt marshes, beaches, barrier beaches, shellfish beds, salt ponds, and floodplains which are contrary to CZM Policies (1) and (8), and the municipality has not adopted wetland or floodplain by-laws or ordinances to condition or deny construction in such areas.  
  
b. municipal zoning sanctions uses of salt marshes, beaches, barrier beaches, shellfish beds, salt ponds, and floodplains which are contrary to CZM policies (1) and (8), but the municipality had adopted wetland or floodplain by-laws or ordinances to condition or deny construction in such areas.
- (2) municipal zoning allows for uses in port areas which are not maritime dependent (Policy (17)), and
- (3) municipal zoning allows for uses that may be incompatible with the features and characteristics to be protected in areas to be designated as Areas for Preservation or Restoration (Policy (2)).

The first type of conflict is resolved by the new Zoning Enabling Act (MGLA Ch. 40A, s. 3) which specifically proscribes zoning ordinances or by-laws which would "exempt land and structures from floodplain or wetlands regulations established pursuant to general law." These "regulations" include the Wetlands Protection Act (MGLA Ch. 33A, s. 40) whereby Conservation Commissions review and issue permits for wetlands alterations subject to (a) appeal to or by the Commissioner of the Department of Environmental Quality Engineering and (b) conformance with regulations promulgated by the Commissioner. They also include restrictions under the Coastal Wetlands Restriction Act (MGLA Ch. 130, s. 105) which authorizes the commissioner of Environmental Management to place orders on property owners' deeds restricting alterations to wetlands. Both the state Wetlands Protection and Restrictions Acts thus supercede local zoning.

Under the CZM program, technical assistance will be provided to communities to assist in bringing local zoning ordinances into conformance with Policies (1) and (8). Notice will be given whenever a new wetlands area is to be restricted under the Wetlands Restriction Program, thereby giving communities an opportunity to voice their concerns and strive for resolution of conflicts. Notice will also be given of revised regulations for the Wetlands Protection Act and a public hearing held at which these concerns can be addressed.

The second type of conflict will be addressed on a case-by-case basis. Policy (17) stipulates that port interests and public agencies be consulted and, if necessary, a public hearing be conducted whenever

a project in a port area may be denied required state permits or be deemed, for federal permits or assistance, inconsistent with the CZM program because it is presumed to conflict with another possible use. Assistance will also be provided to port communities to develop harbor plans and zoning ordinances or by-laws in conformance with the CZM policy intent of promoting maritime dependent development in port areas.

The third type of conflict will be resolved through the APR designation process. Public notice will be given of any proposed APR designation to be implemented by the Secretary of Environmental Affairs' power to establish areas of critical environmental concern. Affected local governments will be consulted and a public hearing held. If the designation proceeds, technical assistance will be provided to aid in bringing municipal zoning by-laws or ordinances into conformance with the purpose of the designation.

#### REGIONAL PLANNING AGENCY PLANS

During each of the three years of program development, the coastal regional planning agencies have been contracted by CZM to coordinate existing regional plans and on-going regional planning efforts with the CZM program. Regional planning agency staff have also been members of the Planning Committee of the Governor's Task Force on Coastal Resources. Through their participation on the Planning Committee, the coastal regional planning agencies had an opportunity to shape the CZM program and assure consistency with existing regional plans. Many of the regional planning agency plans' recommendations are incorporated in the chapter on Coastal Regions. For example, the recommendations of the Metropolitan Area Planning Council's Open Space Plan for coastal open space are reflected both in the priority given to urban waterfront open space acquisition and the acquisition recommendations made for the Lower North Shore, Boston Harbor and South Shore.

In recognition of the similarity in goals and planning timeframe between the CZM program and the "208" areawide wastewater management planning being conducted by regional planning agencies, special efforts to coordinate the two programs were made. CZM prepared a paper circulated to "208" planning agencies describing the program's objectives and policy thrusts and setting further the criteria by which "208" agency planning outputs would be reviewed for consistency with the CZM program. In addition, CZM participated selectively in "208" public participation meetings as did 208 agency personnel in CZM public participation meetings. Since the "208" plans are not yet completed, the process of coordination between CZM and areawide wastewater management planning is on-going.

CZM also developed a special relationship with the Martha's Vineyard Commission so that the policies of the CZM program fitted with the unique regional-level regulatory powers exercised by the Commission. Specifically, CZM contracted with the Commission to analyze how the regulatory powers of the Commission could be relied upon to implement the CZM program on the Vineyard, to explore the feasibility of the Vineyard Commission qualifying as a "segmented" program, and to develop and open space and recreational development strategy for the island. The Vineyard Commission will, under the Massachusetts 306 program,



continue to enjoy a special status, and will be contracted to implement parts of the CZM program on the island.

CZM also met with regional transit authorities on Cape Cod, southeastern Massachusetts, and metropolitan Boston to coordinate recommendations for demonstration projects and transit studies for transportation to coastal recreation.

Transit authorities have plans for extending or creating bus and subway services both within urban areas and outlying areas. Those plans which entail physical construction within the coastal zone have been reviewed, and the CZM program does not conflict with them (see listing of transportation projects in General Development and Public Investment).

The process of coordinating with regional plans did not surface any outstanding conflicts with the CZM program. While the priorities for action in existing regional plans and the CZM program are not completely identical, the policies of the CZM program have generally been viewed as supportive and compatible with those in existing regional plans.

#### STATE AGENCY PLANS

The CZM program has been coordinated with six distinct state plans. These plans and their relationship to the CZM program are discussed below.

-- Statewide Comprehensive Outdoor Recreation Plan (SCORP) has been prepared by the Department of Environmental Management (DEM) and recommends that recreational needs be met where demand is greatest and supply most deficient and that priority be placed on satisfying the needs for the most widely demanded recreational activity. The Plan identifies swimming as the most popular recreational activity and finds that urban areas, particularly the greater Boston area is the area of highest need for new recreational facilities. DEM reviewed drafts of the CZM program. The CZM program incorporates both the SCORP data base and demand methodologies and endorses the SCORP priorities by giving high priority for both public beach acquisition and open space/recreation development in urban areas.

-- State Growth Policy Plan has been prepared by the Office of State Planning (OSP). It recommends that new growth and development be channelled to existing urban centers or to regional development centers and that state actions, in particular state programs of public investment, adhere to the policy and support urban redevelopment. OSP, through its membership on the Planning Committee of the Governor's Task Force on Coastal Resources, reviewed various drafts of the CZM program and advocated explicit incorporation of the State Growth Policy into the CZM program. The Program Submission reflects the State Growth Policy in the Chapter II section on General Development and Public Investment.

-- Water Quality Basin Plans have been prepared by the Division of Water Pollution Control (DWPC) to comply with both state and federal water quality requirements for establishing water quality classifications

for stream segments. Plans have been completed for all but one of the major coastal basins and the proposal classifications do not conflict with the CZM program. These plans are not enforceable until a public hearing has been held and the classifications adopted by regulation. DWPC has also reviewed drafts of the CZM program and endorses its policy thrusts. However, in identifying areas where water quality problems are sufficiently severe as to indicate a need for treatment plant facilities, some of the Basin Plans propose the extension of sewer service to sensitive environmental or hazard areas. Such extensions would be contrary to the CZM program. These conflicts will be resolved as sewage treatment plant construction plans are developed. The process of resolution will be guided by a review of such plans for conformance to the CZM program, 208 areawide waste water treatment plans, to the state's Growth Policy, and DWPC's own policy of denying funding for treatment works or collection systems to newly sub-divided areas, and by evaluation of the severity of water quality problems the treatment system is designed to ameliorate. (For further detail see Policy (35)).

-- Transportation Plans have been and continue to be prepared by the Department of Public Works (DPW) in conjunction with regional planning agencies. The Secretary of Transportation and Construction, the cabinet officer in charge of transportation, was a member of the Governor's Task Force on Coastal Resources and was thus provided an opportunity to shape the course of the CZM program. DPW has also reviewed drafts of the CZM program. Current transportation plans have been reviewed for consistency with the CZM program (See General Development and Public Investment Section). As others are developed, coordination with the CZM program will be achieved through the process outlined under Policy (35).

-- Metropolitan District Commission (MDC) Plans have been reviewed in the course of preparing the section on the Boston Harbor Region in Chapter V. MDC was a member of the Boston Harbor Committee which advised the CZM program during its preparation of that section.

-- Port Plans have been prepared and adopted by MASSPORT for the airport (Logan Masterplan). The Logan Masterplan does not conflict with the CZM program. No plan has yet been prepared or adopted for the seaport. MASSPORT has been consulted in the development of the CZM program, and CZM's port and harbor policies have been supported by MASSPORT. MASSPORT was also an active participant in the preparation of the section of the regional chapter on Boston Harbor.

#### INTERSTATE AGENCY PLANS

The New England River Basins Commission's Southeastern New England Study (SENE) is the only interstate plan affecting the Massachusetts coastal zone. The Governor's Task Force on Coastal Resources and CZM staff, in the fall of 1974 and winter of 1975 devoted much effort to reviewing the draft SENE plan and endorsed its general thrusts. The Commission's Executive Director was a member of the Governor's Task Force on Coastal Resources and participated in the development of the CZM program. Extensive use was made of the information and policy direction provided by SENE and no conflicts have been identified be-

tween the SENE plan and CZM.

#### FUTURE COORDINATION PROCESSES

General coordination processes to resolve conflicts between the CZM program and existing or future plans are described in the Management Chapter. They include:

1. for agencies within the Executive Office of Environmental Affairs, the conflict resolution powers of the Secretary of Environment Affairs;
2. Providing notice to local governments and the public of significant state actions undertaken in the coastal zone and providing an opportunity to review and comment;
3. Coordination with federal agencies under federal consistency review procedures;
4. Maintenance of working level relationships between CZM and such state agencies as the Departments of Community Affairs and Public Works, the Office of State Planning, and regional planning agencies to coordinate provision of technical and financial assistance to communities and to ensure planning for public infrastructure investments complies with state growth and development and CZM policies;
5. Cabinet level review for inter-secretariat coordination or advice to the Governor on major state development actions or new program initiatives (in such reviews, the Secretary of Environmental Affairs will speak for CZM policy concerns); and
6. Review of environmental impact reports prepared under the Massachusetts Environmental Policy Act for state funded and permitted projects.

LOCAL ZONING BY-LAWS

<u>Town</u>	<u>Zoning</u>	<u>Wetlands By-Law or District</u>	<u>Floodplain By-Law</u>	<u>Wetlands Restricted</u>	<u>Coordination with Local &amp; Reg. Agencies</u>	<u>Potential Conflict With CZM Plan</u>
Salisbury	Yes	No	Yes	Yes	8/76	1b
Newburyport	Yes	No	Yes	Yes	8/76	1b, 3
Newbury	Yes	Yes	No	Yes	8/76	1b, 3
Rowley	Yes	No	Yes	Yes	10/76	1b
Ipswich	Yes	Yes	Yes	Yes	9/176	1b, 3
Essex	Yes	Yes	No	Yes	9/76	1b
Gloucester	Yes	Yes	Yes	No	9/76	1b, 2
Rockport	Yes	No	No	No	9/76	1a
Manchester	Yes	Yes	No	No	9/76	1b
Beverly	Yes	No	No	No	10/76	1a
Salem	Yes	Yes	No	No	10/76	1b
Marblehead	Yes	No	No	No	7/76	1a
Swampscott	Yes	No	Yes	No	9/76	1a
Lynn	Yes	No	No	No	10/76	1a, 2
Nahant	Yes	No	Yes	No	7/76	1b
Saugus	Yes	Yes	Yes	No	8/76	1b
Revere	Yes	No	No	No	10/76	1a
Chelsea	Yes	No	Yes	No	9/76	1b

<u>Town</u>	<u>Zoning</u>	<u>Wetlands By-Law or District</u>	<u>Floodplain By-Law</u>	<u>Wetlands Restricted</u>	<u>Coordination With Local &amp; Reg. Agencies</u>	<u>Potential Conflict With CZM Plan</u>
Everett	Yes	No	No	No	11/75	1a
Boston	Yes	No	No	No	6/76	1a
Quincy	Yes	No	Yes	No	9/76	1b
Weymouth	Yes	No	Yes	No	10/76	1b
Hingham	Yes	Yes	Yes	No	1/77	1b
Hull	Yes	No	No	No	1/77	1a
Cohasset	Yes	Yes	Yes	Yes	8/76	1b
Scituate	Yes	Yes	Yes	No	9/76	1b, 3
Marshfield	Yes	Yes	No	Yes	8/76	1b
Norwell	Yes	Yes	No	Yes	9/76	1b
Pembroke	Yes	No	Yes	Yes	9/76	1b, 3
Kingston	Yes	No	Yes	No	9/76	1b
Duxbury	Yes	Yes	Yes	Yes	9/76	1b
Plymouth	Yes	Yes	No	No	9/76	1b
Wareham	Yes	Yes	Yes	Yes	3/77	1b
Marion	Yes	No	Yes	Yes	1/77	1b

<u>Town</u>	<u>Zoning</u>	<u>Wetlands By-Law or District</u>	<u>Floodplain By-Law</u>	<u>Wetlands Restricted</u>	<u>Coordination With Local &amp; Reg. Agencies</u>	<u>Potential Conflict With CZM Plan</u>
Mattapoisett	Yes	No	Yes	No	12/76	1b
Fairhaven	Yes	Yes	Yes	No	1/77	1b
Achushnet	No	Yes	No	No		1b
New Bedford	Yes	No	Yes	No	2/77	b
Dartmouth	Yes	Yes	Yes	No	2/77	1b
Westport	Yes	No	Yes	Yes	1/77	1b
Fall River	Yes	No	No	No	1/77	2, 1a
Freetown	No	No	No	No	12/76, 1/77	1a
Somerset	Yes	No	Yes	No	10/76	1a
Swansea	Yes	No	Yes	No	10/76	1b
Dighton	Yes	No	No	No	11/76	1a
Berkley	No	No	No	No	11/76	1a
Rehoboth	Yes			No		
Seekonk	Yes	No	No	No		1a

<u>Town</u>	<u>Zoning</u>	<u>Wetlands By-Law or District</u>	<u>Floodplain By-Law</u>	<u>Wetlands Restricted</u>	<u>Coordination With Local &amp; Reg. Agencies</u>	<u>Potential Conflict With CZM Plan</u>
Bourne	Yes	No	Yes	No	7/76 9/76 10/76	1b
Falmouth	Yes	Yes	No	No	9/76	1b
Sandwich	Yes	Yes	Yes	No	9/76	1b
Mashpee	Yes	Yes	Yes	No	7/76 8/76	1b
Barnstable	Yes	Yes	No	No	7/76 10/76 10/76	3
Yarmouth	Yes	Yes	Yes	No	9/76	1b
Dennis	Yes	Yes	No	No	7/76 8/76	1b
Brewster	Yes	Yes	Yes	No	9/76	1b
Harwich	Yes	Yes	No	No	7/76	1b
Chatham	Yes	Yes	No	No	9/76 10/76	1b
Orleans	Yes	Yes	Yes	Yes	7/76 8/76	None
Eastham	Yes	No	No	Yes	6/76 7/76	1b

<u>Town</u>	<u>Zoning</u>	<u>Wetlands By-Law or District</u>	<u>Floodplain By-Law</u>	<u>Wetlands Restricted</u>	<u>Coordination With Local &amp; Reg. Agencies</u>	<u>Potential Conflict With CZM Plan</u>
Wellfleet	Yes	No	No	No	7/76	1a
Truro	Yes	No	No	Yes	7/76 8/76	1b
Provincetown	Yes	No	Yes	No	7/76 9/76	1b
Nantucket	Yes	No	Yes	No	12/76	1b
Chilmark	Yes	Yes*	Yes*	Yes	12/76	None
Edgartown	Yes	Yes*	Yes*	Yes	12/76	None
Gay Head	Yes	Yes*	Yes*	Yes	12/76	None
Oak Bluffs	Yes	Yes*	Yes*	Yes	12/76	None
Tisbury	Yes	Yes*	Yes*	Yes	12/76	None
West Tisbury	Yes	Yes*	Yes*	Yes	12/76	None

\* A coastal district which includes wetlands and floodplains was established by the Martha's Vineyard Commission for the entire island.





## GLOSSARY

A-95	Review Established by the Intergovernmental Coordination Act of 1968 this review process ensures that federal agencies are made aware of state, regional and local concerns about the compatibility of proposed federally funded projects with other state or federal programs.
APR	Area for Preservation or Restoration
A zones	Areas identified on the Flood Insurance Rate Maps prepared by the Federal Insurance Administration that are located with the 100 year flood zone.
BCF	Billion Cubic Feet
BLM	Bureau of Land Management
B&M	Boston and Maine Railroad
BOR	Bureau of Outdoor Recreation
BPD	Barrels Per Day
BRA	Boston Redevelopment Authority
CAC	Citizen Advisory Committee
CCPEDC	Cape Cod Planning and Economic Development Commission
CFR	Code of Federal Regulations
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DCA	Department of Community Affairs
DCS	Division of Conservation Services
DEM	Department of Environmental Management
DEQE	Department of Environmental Quality Engineering
DRW&RV	Department of Fisheries, Wildlife and Recreational Vehicles
DLE	Division of Law Enforcement
DMF	Division of Marine Fisheries
DOC	Department of Commerce
DOI	Department of Interior
DOT	Department of Transportation
DPW	Department of Public Works
DWPC	Division of Water Pollution Control
DWT	Dead Weight Ton

EDA	Economic Development Administration
EDIC	Economic Development and Industrial Corporation
EFSC	Energy Facilities Siting Council
EIS	Environmental Impact Statement
EMMA	The MDC Eastern Massachusetts Metropolitan Area waste water management plan
EOCD	Executive Office of Communities and Development
EOTC	Executive Office of Transportation and Construction
EOEA	Executive Office of Environmental Affairs
EPA	Environmental Protection Agency
ERDA	Energy Research and Development Administration
E zones	Areas identified on the Flood Insurance Rate Maps prepared by the federal Insurance Administration which are subject to flood-related erosion.
FAA	Federal Aviation Administration
FEA	Federal Energy Administration
FIA	Federal Insurance Administration
FIRM	Flood Insurance Rate Maps
FPC	Federal Power Commission
FRC	Federal Regional Council
GAPC	Geographical Area of Particular Concern
GSA	United State General Services Administration
HEW	Health, Education and Welfare
HUD	Department of Housing and Urban Development

LNG	Liquid Natural Gas
MACC	Massachusetts Association of Conservation Commissions
MAPC	Metropolitan Area Planning Council
MARAD	Maritime Administration, Department of Commerce
MBTA	Massachusetts Bay Transit Authority
MCZM	Massachusetts Coastal Zone Management
MDC	Metropolitan District Commission
MEPA	Massachusetts Environmental Policy Act
MGLA	Massachusetts General Laws Annotated
MOU	Memorandum of Understanding
MVC	Martha's Vineyard Commission
MVPC	Merrimack Valley Planning Council
NAAQS	National Ambient Air Quality Standards
NEIWCCC	New England Interstate Water Pollution Control Commission
NEPA	National Environmental Policy Act
NEPOOL	New England Power Pool
NERBC	New England River Basins Commission
NERCOM	New England Regional Commission
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NPEDC	Nantucket Planning and Economic Development Commission
NPS	National Park Service

OCS	Outer Continental Shelf
OCZM	Office of Coastal Zone Management
OSP	Office of State Planning
PCB	Polychlorinated Biphenyls
PUD	Planned Unit Development -- A zoning ordinance or by-law which allows a variety and higher density of housing types on a tract that would otherwise be subject to conventional zoning. Provision of open spaces is usually required.
SADA	Special Assistance Development Area
SCORP	State Comprehensive Outdoor Recreation Plan
SENE	Southeastern New England Study
SNG	Synthetic Natural Gas
SRA	Significant Resource Area
SRPEDD	Southeast Regional Planning and Economic Development District
RPA	Regional Planning Agency
UMTA	Urban Massachusetts Transit Association
USDA/SCS	United States Department of Agriculture, Soil Conservation Services
USF&W	United States Fish and Wildlife
USGS	United States Geological Survey
V zones	Areas identified on the Flood Insurance Rate Maps prepared by the Federal Insurance Administration which are within the 100 year flood zone and are subject to the impact of storm waves.

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